THE EVOLUTION OF INTEGRATED CLOSE AIR SUPPORT: WORLD WAR II, KOREA AND THE FUTURE OF AIR-GROUND COMBINED ARMS SYNERGY

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APPROVAL

The undersigned certify that this thesis meets master's-level standards of research, argumentation, and expression.

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DISCLAIMER

The conclusions and opinions expressed in this document are those of the author. They do not reflect the official position of the US Government, Department of Defense, the United States Air Force, the United States Marine Corps, or Air University.

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Major Gallogly has served in five squadrons with both Marine Aircraft Group 39 and Marine Aircraft Group 36. He has served at the company and battalion level with 1st Battalion, 4th Marine Regiment and 3rd Battalion, 1st Marine Regiment. His two combat tours include service with Marine Light Attack Helicopter Squadron 169 in Operation Iraqi Freedom I flying close air support, assault support, and command and control in support of the 1st Marine Division in 2003. He returned to Iraq in 2004-2005 as the Battalion Air Officer for the 3rd Battalion, 1st Marines. 3rd Battalion / 1st Marine Regiment was the 1st Marine Division's main effort battalion for Operation AL FAJR (the second Battle of Fallujah).

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ABSTRACT

This thesis addresses the evolution of integrated close air support (CAS) from its birth to the present. By comparing three air arms' development of CAS, it provides a historical bedrock for the controversies and discord that surround debate regarding the tactic.

Viewing CAS's air-ground synergy is a key design of the thesis, as many in the past have viewed it from only one side of the argument. The introduction defines and considers both the air and ground elements as essential to integrated CAS. Chapters One through Three outline the detailed histories of the tactic's development by three air arms. Based on in-depth research, the conclusion emerges that the German Luftwaffe, the US Marine Corps, and the US Army Air Forces all conceived of the tactic concurrently, but evolved it through different priorities, pressures, and personalities.

Historical chronology serves as a primary scaffold for the thesis, while the leadership of men in three separate air arms provides a secondary construct. Wolfram von Richthofen, Keith McCutcheon, and Elwood "Pete" Quesada were military leaders and innovators from different backgrounds. Their commonalities included dedicated, forceful leadership, tactical and operational prowess, and a focus on air-ground synergy. The thesis continues with the first year of US involvement in the Korean Conflict as a cautionary tale for integrated CAS. Many of the insights from late stage World War II CAS had to be relearned by the USAF during *the Korean CAS Controversy*.

The thesis concludes with a review and then supposition based upon the glide-path established by nearly 100 years of CAS. The thesis ends with integrated CAS's effects on the enemies of 3rd Battalion / 1st Marines during the Second Battle of Fallujah. This section views the art and science of CAS in modern high intensity urban combat. With the promise of precision guided munitions finally met, the potential for integrated CAS' effects on current and future battlefields is truly awe-inspiring. The hope that drove this work is that future US infantrymen will never advance without the pinnacle of the tactic at their beck and call.

CONTENTS

Introduction

Just east of Le Mans was one of the best examples of armor and air cooperation I have ever seen. For about two miles, the road was full of enemy transport and armor, many of which bore the unmistakable calling card of the P-47 fighter-bomber - namely, a group of fifty-caliber holes in the concrete. Whenever armor and air can work together in this way, the results are sure to be excellent. . . . To accomplish this happy teamwork two things are necessary: first, intimate confidence and friendship between air and ground; second, incessant and apparently ruthless driving on the part of the ground commander. A pint of sweat saves a gallon of blood.

-- General George S. Patton Jr. USA

Background

The evolution of Close Air Support (CAS) has a complex history, rich with many important lessons regarding the refinement of tactics and operational art. Conceived in the closing stages of World War I, CAS is fast approaching its first century of combat. Currently, the Department of Defense (DOD) defines CAS as "air action by fixed- and rotary-wing aircraft against hostile targets that are in close proximity to friendly forces and that require detailed integration of each air mission with the fire and movement of those forces."[1] It was not until toward the end of World War II, in 1944-1945, that CAS was refined enough to integrate fully with the ground scheme of maneuver. This integration unleashed the pinnacle of twentieth century combined arms effect. Although many view CAS through a wide lens, this thesis shall focus on the conception, maturation, and future of *integrated CAS* in the hope of anchoring the contemporary debate on the subject to its historical bedrock.

Many seasoned military professionals and historians are aware of CAS's development writ large, from World War I's trench strafing, to the Wehrmacht Blitzkrieg in the early stages of World War II, through to modern CAS. However, far less well known is that integrated close air support strikes, coordinated in a detailed manner with the ground scheme of maneuver, what are today called, "Type I terminal control air strikes," did not develop for the Allies or the Axis until 1944-1945.[2] It was not until nearly 30 years after CAS's inception that radio technology and the tactics, techniques,

[1] Joint Publication 3-09.3, *Close Air Support*, 8 July 2009.
[2] Joint Publication 3-09.3, *Close Air Support*, V-15.

and procedures allowed dynamic in-flight re-tasking and target prioritization were refined to what this thesis shall term *integrated CAS*.

In certain US military circles, there continues to be sporadic, inter-service debate regarding the prioritization, proper roles, and finer points of integrated CAS.[3] Although debate regarding complex tactics and operational concepts such as CAS and their effect upon the joint force is to be expected, the level of rancor is and has been considerable. This rancorous debate and discourse regarding CAS has pervaded most of its history.

This fact is due primarily to differing inter-service doctrines and perspectives regarding integrated CAS. There are patterns of shallow analysis in much of the current debate. One element consistently missing is a solid understanding of the history of fully integrated CAS's conception and maturation. Marcus Cicero's dictum serves as a stark warning: "To be ignorant of what happened before you were born is to be ever a child." The history, controversy, and ultimate promise of integrated CAS forms a rich narrative, holding cautionary and informative lessons for the modern tactician, operational campaign planner, and strategist. A second element often missing is to hear from individuals who have experienced CAS in combat both as a pilot and a forward air controller and can approach the tactic in an integrative manner. This was a motivating factor for the author.

This thesis shall articulate that the US use of integrated CAS holds a key to achieving battlefield victory in the shortest time, with the least friendly casualties, whether engaged with symmetrical or asymmetrical enemies. No other pairing of combat power can place the enemy in as dire a dilemma than ground element maneuver with integrated CAS. Nothing else can simultaneously hearten friendly forces while terrifying the enemy to the degree expertly integrated CAS can.

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[3] The following three examples are simply representative:
Maj A.W. Clark and LtCol J.B. Reeves USAF, "Reality Check", *Armed Forces Journal*, February 2011, http://www.armedforcesjournal.com/2011/02/5278489. This was written in response to LTC Paul Darling Alaska ANG and LT Justin Lawlor USNR, "Updating Close-Air Support" *Armed Forces Journal*, November 2011, http://www.armedforcesjournal.com/2010/11/5009090.
Other examples include Rebecca Grant, "The Clash About CAS", *Airforce-Magazine.com*, January 2003. http://www.airforce-magazine.com/MagazineArchive/Pages/2003/January%202003/0103cas.aspx. The CAS debate is not new, with an older example: Major Raoul Archambault USA and LCDR Thomas M. Dean USN, "Ending the Close Air Support Controversy," (Alexandria, VA: Defense Technical Information Center, 1991, Derived from a Naval War College for the Department of Operations).

Historical Moorings

The thesis' historical anchors will be the first two conflicts that saw integrated CAS's full implementation: World War II and the Korean Conflict. The armed forces and air arms that this thesis will evaluate are: the Germans, the United States Marine Corps, (USMC) and the United States Army - US Army Air Forces (USAAF). The United States Navy's (USN) air arm is covered peripherally in the course of the thesis during both World War II and Korea. The thesis does not evaluate the important contributions to CAS made by British and Commonwealth armed forces during this period, simply due to the scope of the thesis. However, chapter 3 covers the important British influence on USAAF CAS development in 1942 and 1943.

It was in the process of research that the author fully realized these distinct military forces conceived integrated CAS at approximately the same time in 1944-1945, wholly independent of one another.[4] The date for integrated CAS's inception is considerably later than most military professionals presume. The Germans did not conduct fully integrated CAS against either Poland or France. The US Army - USAAF team did not prior to mid-1944, nor did the USMC prior to January 1945 in re-conquest of the Philippine Islands.

Examples of CAS tactics prior to full integration include pre-planned targeting, bomb-line and bomb-box tactics, and air strikes where there was clear delineation between friendly and enemy forces. Prior to 1944, CAS could not integrate fully with the ground element's fluid maneuver via radio. Air-ground operational plans were inflexible beyond simple, one-way communication methods such as smoke, air panels, flags or a set-piece plan. This limitation prevented dynamic re-tasking or re-targeting and required newly refined tactics, techniques and procedures (TTPs). It would take more than just better radio technology to achieve fully integrated CAS's promise. It also required open-minded, intelligent tacticians and operational leaders who understood the potential synergy of the air-ground team and that together they truly were more capable than the

[4] Williamson Murray and Alan R. Millet, *A War to Be Won – Fighting the Second World War*, (Cambridge, MA: Harvard University Press, 2000), 419. Murray and Millet are highly critical of both Generals Eisenhower and Bradley in failing to "learn anything" from combat in the Pacific Theater during the planning and execution of Operation Overlord in 1944.

sum of their disparate parts. This required prescient experts to take an integrative approach.[5]

Chapter 1 uses Wolfram von Richthofen's biography to view German evolution of integrated CAS from 1918-1944. Chapter 2's scaffold is the US Marine Corps' pre-World War II doctrinal development and then their World War II CAS combat chronology. Chapter 3's scaffold is the USAAF interwar CAS doctrinal development and retraction, plus their World War II combat chronology of the tactic. Chapter 4 covers the US use of integrated CAS during the Korean Conflict, providing the second major combat trial in the evolution of the tactic. The proficiency issues and the prioritization of the tactic are covered during what came to be known as the Korean CAS controversy. With integrated CAS' first two historic trials firmly established, the thesis then covers the innovations in CAS that occurred between 1951 and 2003. Next, the thesis covers lessons learned from integrated CAS during Operation Phantom Fury, the second Battle of Al Fallujah (where the author served as the battalion air officer for the 1st Marine Division's main effort, 3rd Battalion, 1st Marines). Finally, supposition and recommendations on the tactic's future conclude the thesis.

Viewed in-depth throughout the thesis are the three key integrated CAS innovators: the Luftwaffe's *Generalfeldmarschall* Wolfram von Richthofen, the US Marine Corps' Lieutenant Colonel Keith B. McCutcheon, and the US Army Air Forces Lieutenant General Elwood "Pete" Quesada.

Research Question

Why is integrated CAS important, and how can the US best leverage its capacities across time and in varied operational conditions? This requires a firm anchoring in history. The author's initial step was to review the three seminal secondary sources on the history of CAS: *Case Studies in the Development of Close Air Support*, edited by Benjamin F. Cooling, Richard P Hallion's *Strike from the Sky, The History of Battlefield Air Attack 1911-1945,* and Peter C. Smith's *Close Air Support, An Illustrated History, 1914 to the Present*.

[5] Roger Martin, *The Opposable Mind, Winning Through Integrative Thinking*, (Boston, MA: Harvard Business Press, 2009), 6.

The synthesis of these three books did not bring the full picture of integrated CAS's development to the surface. This realization brought the author to the conclusion that the vast majority of those articulating strong opinions in the contemporary CAS debates did not have the complete picture, even if they had a grasp of CAS through a narrow or parochial lens. Research proceeded with a view toward the following concepts: the air-ground synergy engendered by CAS, CAS doctrinal development 1918-1953, and the effects of integrated CAS upon both friendly and enemy forces.

Chapter 1

German Integrated Close Air Support Development 1918-1944

I speak to you for the first time as Prime Minister in a solemn hour for the life of our country . . . A tremendous battle is raging in France and Flanders. The Germans, by a remarkable combination of air bombing and heavily armored tanks, have broken through the French defenses . . . and strong columns of their armored vehicles are ravaging the open country.

--Winston S. Churchill, 19 May 1940

Chapter Overview

This chapter shall present a comprehensive view of the development of German integrated Close Air Support (CAS) from 1918-1944. The chapter unfolds to cover the inception of German CAS, early maturation and development, and its ultimate fruition in fully integrated form in 1944. A large portion considers the impact of the world's primary CAS innovator during this period, Wolfram von Richthofen.

The Germans conceived their CAS doctrine in the late stages of World War I, and refined it during the interwar period. From 1936 to 1939, they acquired a windfall of valuable combat experience during the Spanish Civil War. In the early years of World War II, the Germans were the world's leading practitioners of CAS, utilizing tactics just shy of full integration. German CAS achieved fruition in early 1944 on the eastern front against the Soviet Union.

Despite many common misperceptions, the Wehrmacht did not conduct fully integrated CAS tactics against the Poles, French, or even the Soviets in the early stages of World War II. "It is often supposed that the Luftwaffe provided 'close air support' for the advancing armored columns, laying down a curtain of aerial firepower just in front of the advancing tanks. Indeed, it is often thought that the ground forces could literally 'call in' air strikes. While this occurred from time to time in the German campaigns, it is not an accurate picture of the role of air power in Blitzkrieg."[1]

[1] Barry R. Posen, *The Sources of Military Doctrine, France, Britain, and Germany Between the World Wars*, (Ithaca, NY: Cornell University Press, 1984), 213.

The Germans conducted CAS, but their air strikes were not what would today be termed positive terminal control. This stimulated research on the history of integrated CAS for all the combatants in World War II. Until 1944, the Germans used tactics such as visual coordination with smoke and panels, preplanned air strikes, bomb-line coordination, and air strikes against clearly delineated targets marked by major terrain features. An example was their successful assault on Sedan along the Meuse River during the drive across France and the Low Countries in 1940. Theoretical, organizational and communication technology inertia hindered integrated CAS's full fruition prior to 1944 on the Eastern Front.[2]

This fact runs parallel with the introduction of fully integrated CAS by the Allies in France and the US Marine Corps in the Pacific Theater at approximately the same time. Thus for Germany and the US, air-ground integration of CAS fully matured into the state of the art independently, at the same time. Chapter 1 begins chronologically, as the Germans pioneered integrated CAS, both beginning and achieving the tactic prior to any other military. They deserve the credit due those who innovate on the world's stage. Even if their early World War II blitzkrieg did not fully integrate CAS, the level of air-ground coordination they did achieve, stunned their enemies and the world.

German Integrated CAS Antecedents

CAS in World War I

In early spring 1918, Imperial Germany conducted its final offensive to seize Paris and settle World War I. The use of innovative *Hutier*, or storm trooper tactics during this final big push named for Germany's patron saint Michael are well known. After four years of sluggish trench warfare that saw gains measured in yards, this campaign rekindled the Germans' hope for the return of maneuver on the deadlocked Western Front. The Michael offensive brought the Germans to within 40 miles of Paris and their conception of victory, before the attack crested and petered out.[3]

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[2] Richard R. Muller, *The German Air War in Russia,* (Baltimore, MD: The Nautical and Aviation Publishing Co. of America Inc, 1992), 222.
[3] Hew Strachan, *The First World War,* (New York: NY, Penguin Books, 2003).

Less well known is the Germans' execution of attack aviation in direct support of their army during the offensive. It was near the culmination of World War I that modern attack aviation and CAS, albeit not fully integrated CAS, were born. Although communications technology had not advanced for fully integrated CAS, the German air arm organized, trained, and executed attacks in conjunction with ground offensives. According to Luftwaffe General Paul Diechmann, the Germans conducted tests in air to ground bombing in 1914, prior to World War I. Diechmann goes on to state that during the war, they conducted their first ground attack mission in Flanders in July 1917. "The results, both in the form of the effects of weapons fire and in that of the impact on the enemy morale, were so impressive . . ."[4]

They first conceived of ground-attack units called *Schlachtstaffeln,* and gave them dedicated instruction. By November 1918, they had 38 squadrons comprising 228 aircraft. Even at this early date, the Germans' conception was of cooperation. General Deichmann stated, "Since the mission of the ground-support air forces was to participate in ground combat, they were to go into action the moment the infantry left the trenches, bringing movement into what was otherwise positional warfare . . . The ground-attack air forces were to attack in squadron-size waves, striking successfully at all points of resistance to the infantry advance on the ground."[5]

Deichmann then states the philosophy behind such tactics by stating that the Germans had adopted a "maxim in force in 1916 . . .No battle must be fought on the ground without the Air Force making its honorable contribution."[6] Historian Lee Kennett states that "coordination with ground operations was developed as much as the primitive communications equipment would permit."[7] The Germans conducted live fire exercises to include aircraft, assault troops, and even mock trenches in rehearsing their revolutionary conceptions of attack aviation in anticipation of Michael.[8] Ultimately, the Germans' CAS attempts in World War I were "still in a most primitive stage" but this

[4] General der Flieger Paul Diechmann, Luftwaffe, German Air Force Operations in Support of the Army: USAF Historical Study No. 163 (Maxwell AFB, AL: Air University, 1962), 3 and 5 [Hereafter as Diechmann Study].
[5] Diechmann Study, 6.
[6] Diechmann Study, 6.
[7] Lee Kennett, *The First Air War, 1914-1918*, (New York, NY: Simon and Schuster, 1991), 211.
[8] Richard R. Muller, "Close Air Support" *Military Innovation in the Interwar Period*, ed. by Williamson Murray and Alan R. Millet, (New York, NY: Cambridge University Press, 1996), 147-149.

should not detract from the credit due them to innovate in this regard, especially so early in aviation's development.[9]

At Michael's outset, the Germans attained temporary air superiority that allowed trench strafing and bombing, but their aerial freedom of action proved fleeting. Soon aircraft from both sides swarmed to the focal point of action, or what the Germans term the *Schwerpunkt* and the Allied land armies knew where the focus of the German attack was centered. Once pre-planned targets were neutralized and German storm-trooper units maneuvered, air-to-ground integration was primitive, with flares, flags, and panels the only available methods. Historian Williamson Murray summarizes "it is critical that good communications be established between them [air and ground]. In fact, though a few aircraft were equipped with primitive radios beginning in 1918, no such communications were available to any belligerent during World War I."[10]

Despite the communication challenges in the final stages of World War I, German forays in attempting to affect integrated CAS were unprecedented among the world's air forces, and they remained at CAS's forefront right up until mid 1944, when the US and UK finally embraced it fully. During the interwar years, a succession of strong Luftwaffe leaders ensured that CAS retained its revered place in the quiver of the Luftwaffe

German Integrated CAS Doctrinal Development (1923-1936)

The German army of the 1920s and 1930s was the most air-minded of the major armies. The use of airpower, cooperation between the army and air force, and air support for the army were all important components of army doctrine and training.

-- Historians James S. Corum and Richard Muller

Based upon an exhaustive study of World War I's lessons learned and led by the Chief of the General Staff, Colonel General Hans von Seeckt, the German army rewrote its doctrine early in the post-war period. *Army Regulation 487, Leadership and Battle with Combined Arms* stressed maneuver warfare by highly mobile forces, with an emphasis on the effective combination of all arms.[11]

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[9] Murray, "The Luftwaffe," *Case Studies in the Development of Close Air Support*, ed. B.J. Cooling, 72.
[10] Martin van Creveld with Steven L. Canby and Kenneth S. Brower, *Air Power and Maneuver Warfare*, (Maxwell AFB, AL, Air University Press, 1994), 25.
[11] Corum and Muller, *The Luftwaffe's Way of War*, 72.

In 1932, the German Army conducted modern training maneuvers that included "new highly mobile forces . . . [that constituted] what would come to be known as Blitzkrieg tactics.[12] The next year saw *Army Regulation 487* rewritten as the foundational doctrine for these tactics, with the doctrine established upon the firmest of foundations; the lessons of the battlefield written by seasoned World War I veterans.

By the 1930s, many of the world air force leaders focused on strategic bombing concepts to the detriment of air power's other roles. Italy's Guilio Douhet and Britain's Hugh Trenchard were prominent air power advocates who espoused strategic bombing's primacy. Indeed the title of the influential air power history *Rhetoric and Reality in Air Warfare* derives from the challenge of delivering on the promise strategic bombing. "RAF leaders would struggle to close the divide between rhetoric and reality by figuring out – in ways that Trenchard had not – how to actually plan and wage a major strategic air campaign."[13]

Britain's J.C. Slessor was a prominent 1930s air power advocate who attempted to shift air power theory's focus from Douhet and Trenchard's bombing concepts toward more tangible support for the army. He remarked in the mid 1930s, "the air situation has no importance in any form of war except in so far as it affects the situation on the ground."[14] Regarding attack aviation specifically, Slessor espoused "the positive influence which can be exerted by an air striking force in direct attack upon objectives on the ground."[15] At first glance, this seems in consonance with what a CAS advocate would espouse, but Slessor considered CAS a temporary role, utilized only when necessary, and believed that tactical air power's primary role should focus on interdiction.

> In other words, in order to make sure of *breaking the crust* of a highly organized defensive system we may again have to employ our assault aircraft *temporarily* in close support of the armoured force that will be used to break in on the ground, against such objectives as artillery areas, anti-tank weapons, defended road blocks, or the movement of the enemy's

[12] Robert M. Citino, *The Evolution of Blitzkrieg Tactics, Germany Defends Itself Against Poland, 1918-1933,* (Westport, CT: Greenwood Press Inc., 1987), 190.
[13] Tami Davis Biddle, *Rhetoric and Reality In Air Warfare: The Evolution of British and American Ideas About Strategic Bombing, 1914-1945*, (Princeton, NJ: Princeton University Press, 2002), 69.
[14] J.C. Slessor, *Air Power and Armies*, (Tuscaloosa, AL: University of Alabama Press, 2009), 7. Slessor states in the introduction that this book was based upon speeches delivered from 1931-1934.
[15] Slessor, *Air Power and Armies*, 2.

> immediate reserves on the battlefield. *But this must only be temporary*; and as soon as the break-in is made and the assaulting troops on the ground have penetrated the enemy's defenses, then the assault aircraft must at once be lifted against the more suitable and important objectives well in the enemy's back areas, with the aim of paralyzing the movement of his main reserves and converting the break-in into a real break-through.[16]

Slessor acknowledged there were occasions when ground forces needed ground-attack aviation to aid in the accomplishment of their mission, but ultimately he committed the oft-cited sin of focusing too narrowly on the lessons of the last war, in this case World War I. In synopsis of British air power advocates and their attempts in the interwar period, Sir Maurice Dean drew the conclusion that "between 1918 and 1939 the RAF forgot how to support the army."[17] The British did not fix this myopia until the later stages of World War II. One of the primary arguments of this thesis; that air-ground synergy can foster immense combat power, went wholly unacknowledged by even by Slessor, one of the only voices in Britain or the US that went against the strategic bombing.

Unlike the British and Americans, the Germans' combined arms perspective placed "great value on air support of ground forces."[18] The lessons of the trenches and a tradition of military innovation helped, but German strategic priorities were always dominated by geography. "The Germans faced significant ground operations from the opening of hostilities . . . no matter what success German air power might achieve, if the ground battle were lost, Germany was lost."[19]

The fact that many Luftwaffe key leaders and officers of the interwar period thought in combined arms and army support terms comes as no surprise, as most started out as army officers who then later became airmen.[20] This was true of many of the world's air arms, but geography and the historic primacy of the German army, or *Heer*,

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[16] Slessor, *Air Power and Armies*, 101-102. Italics are J.C. Slessor's from the original text.
[17] Maurice Dean quoted in John Terraine, "Theory and Practice of Air War: the Royal Air Force," in *The Conduct of Air War in the Second World War: An International Comparison*, ed. by Horst Boog (Providence, RI: Berg, 1992), 469.
[18] Corum and Muller, *The Luftwaffe's Way of War*, 10.
[19] Murray, "The Luftwaffe," *Case Studies in the Development of Close Air Support*, ed. B.F. Cooling, 73.
[20] Peter C. Smith, *Close Air Support, An Illustrated History 1914 to the Present*, (New York, NY: Orion Books, 1990), 32.

vis-à-vis the other branches of the Wehrmacht, drove some of this influence. When coupled with the stinging loss of World War I, a full picture comes to view of the Wehrmacht's priorities firmly rooted in combined arms teamwork. This was not the case at the outset of World War II for many of the Germany's foes.[21]

Luftwaffe Chiefs of Staff following von Seeckt, such as Generals Wever, Kesselring and Jeschonnek, sustained this combined arms focus that astounded the world in 1939-1941. The German *Heer* and its leadership remained "air minded," while "an unhealthy spirit of inter-service rivalry had no place in the Luftwaffe."[22] In 1936 the Wehrmacht had the incredible opportunity to conduct what would today be termed "live fire experimentation and doctrinal development" in combat during the Spanish Civil War.

The Luftwaffe's Condor Legion in the Spanish Civil War (1936-1939)

Germany committed to the support the Nationalists in the Spanish Civil War. Their initial concept was to provide a small air arm, flak batteries, and advisors to support Francisco Franco's forces fighting against the Republican Loyalists.[23] When the initial deployment proved too sparse, Germany increased the commitment to over 100 planes and 5,000 pilots, mechanics, and flak batteries. This force gained world attention as the Condor Legion. Other nations made military contributions as well. The notable foreign forces were the Italians in support of Franco against the Republicans who received Soviet support. More than any other combatant, the Germans utilized the conflict as a laboratory to test and refine tactics, operational doctrine, and the state of the art for much of their weaponry and military technology. One of the tactics they refined was CAS.

In Spain, the Luftwaffe conducted operations that attempted to integrate air-ground teamwork far greater than anything seen during World War I. It was here that the Luftwaffe began to appreciate fully the morale effect CAS attacks could have on both friend *and* foe alike.[24] Both the Germans and their enemies conceived this with trench and pillbox strafing attacks during World War I, but in Spain, the Condor Legion refined

[21] See chapter 3 for exposition on the US Army Air Force CAS development.
[22] James S. Corum, *The Luftwaffe - Creating the Operational Air War, 1918-1940*, (Lawrence, KS: University Press of Kansas, 1997) 65, 142 & 168.
[23] Corum, *The Luftwaffe*, 187.
[24] Smith, *Close Air Support*, 34. See also Lee Kennett, intro., *Case Studies in the Development of Close Air Support*, ed. B. Franklin Cooling, 39.

its attempts at air-ground synergy. Although CAS development occurred in Spain, with the state of radio technology in the 1930s, one could assume the Luftwaffe would have been able to conduct fully integrated CAS. This was not the case, but it was in Spain that the Germans developed tactics such as shuttle attacks, chain attacks, "flying artillery" and all manner of coordination up to, but not including, radio communication.[25]

The Germans "elaborated upon" CAS in Spain, raised their proficiency in tactics and operations, and increased the importance of the concept to their overall scheme of maneuver.[26] The Condor Legion's shuttle attacks originated at airfields intentionally positioned close to the front, allowing squadrons to shuttle back and forth, three or more sorties per aircraft in the course of a battle. This shuttling allowed unprecedented "pressure for hours at a time, which increased the stress and psychological pressure on an enemy defender."[27] Chain attacks conceived in Spain, where multiple aircraft would attack the same ground target in succession and then peel off for repeated passes, proved highly effective. From afar, the squadron looked like an "inclined circle."[28] Spanish Nationalist pilot Joaquin Garcia Morato invented the chain tactic, and the Condor Legion quickly incorporated it.[29]

The strength of the chain tactic was that after the leader's impacts took effect, his wingmen could try to hit where he did if the leader was on target. If the leader missed, the wingmen could adjust their attack onto the correct target based on either the leader's hits, or on the impacts of the aircraft preceding them. The probability of achieving a direct hit rose dramatically, as long as there were enough attacking aircraft and the enemy neither fled nor acquired effective cover and concealment. Both shuttling and chain attacks have modern CAS descendents in the tactics employed by both fixed and rotary wing attack aircraft.[30]

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[25] Corum, *The Luftwaffe*, 194. Corum describes how the Luftwaffe was used in direct support of the Spanish Nationalist Army as "flying artillery" because the Nationalists did not have much in the way of traditional artillery. German CAS efforts of this era have been termed "Flying Artillery". See also Martin Van Creveld, *Air Power and Maneuver Warfare*, (Maxwell AFB: Air University Press, 1994), 32.
[26] Hallion, *Strike from the Sky*, 92.
[27] Corum, *The Luftwaffe*, 195.
[28] Hallion, Richard P., *Strike from the Sky – The History of Battlefield Air Attack 1911-1945*, (Washington, DC: Smithsonian Institute Press, 1989), 106.
[29] Hallion, *Strike from the Sky*, 105.
[30] Joint Publication 3-09.3, *Joint Tactics, Techniques and Procedures for Close Air Support (JCAS)*, 2 Sept 2005, V-32 - V-34. The author has experience in these tactics as both a pilot and forward air controller (FAC).

The Germans developed an institutional open-mindedness on the part of both Luftwaffe and German Army officers.[31] At the same time the British, and to a lesser degree the Americans, were not nearly so open to these tactics and concepts.[32] The Germans at this stage were free from the "rancorous debate that accompanied the evolution of common doctrine and concepts" that pervaded some of the air forces they were soon to face.[33] It is clear that the Germans thought, learned, and applied tactical and operational lessons from both training and the battlefield very quickly.[34] The Spanish Civil War simply jump-started this process prior to World War II. The fact that trying, learning, and adapting continued even into the German's most dire days of late-stage World War II reveals their professionalism. "It remains a supreme irony that during the final one and one-half years of the [Russian] campaign [in World War II] the Luftwaffe . . . at last perfected the technical and organizational means with which to provide reliable close air support."[35] By that late stage however, the German strategic picture had deteriorated to the point where historian Williamson Murray's argument is apropos, that one can have all the success at the tactical and operational levels of war, but if the strategy is flawed, defeat is sure to follow.[36]

The ethos of German Army - Luftwaffe teamwork in the interwar period has been covered, but the synergistic teamwork they developed in this period, and sustained into World War II, proved an immense strength. The air-ground ethos manifested itself in Luftwaffe practices begun in Spain by both senior and junior officers. "Condor Legion Commanders set a Luftwaffe tradition by regularly visiting the front to observe close air support operations. Junior officers of the Condor Legion attempted to learn Spanish and

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[31] Murray, "The Luftwaffe," *Case Studies in the Development of Close Air Support*, ed. B.F. Cooling, 71.
[32] Smith, *Close Air Support*. The book details the UK's early WWII intransigence with both CAS and dive bombing. The USAAC's lack of focus on pursuit and attack aviation in the interwar period is covered by Robert T. Finney, *History of the Air Corps Tactical School 1920-1940*, (Montgomery, AL: USAF Historical Division, Air University, 1955), 70-77.
[33] Murray, "The Luftwaffe," *Case Studies in the Development of Close Air Support*, ed. B.F. Cooling, 71.
[34] Murray, "The Luftwaffe," *Case Studies in the Development of Close Air Support*, ed. B.F. Cooling, 81 and 86. On page 81, Murray makes this point in reference to German introspection after their invasion of Poland.
[35] Richard Muller, *The German Air War in Russia*, (Baltimore, MD: The Nautical and Aviation Publishing Company of America Inc, 1992), 192.
[36] Williamson Murray, *Strategy for Defeat, The Luftwaffe 1933-1945*, (Maxwell AFB, AL: Air University Press, 1983), 319. Author attended a lecture Dr. Murray delivered at SAASS 18 November 2010 where he espoused the same thought.

would also visit the Spanish units at the front."[37] Due to the limits of radio technology, senior Luftwaffe commanders in the Spanish Civil War took up vantage points on hills like their artillery counterparts. This allowed them to gain situational awareness and facilitated coordination not quite to aircraft directly, but to their aerodromes. Thus, Luftwaffe commanders were able to order squadrons to sortie in support of the infantry, in response to their request, or based on the dictates of the battle.[38]

The Germans carefully planned and attempted to execute operations in support of the Nationalist ground troops during the Spanish Civil War. Initially, "the Nationalists seemed incapable of following up their air attacks with ground attacks which took advantage of the shock effect of heavy aerial bombardment."[39] These examples were not lost upon the Germans, who probably learned more through the frustrations of watching the Nationalists early failures in this regard, than they did by observing the Nationalist's more successful follow-up of coordinated air attacks against the Iron Belt fortifications of Bilbao.[40]

By 1938, the Luftwaffe developed its system of liaison to the army's tactical level with their *Fliegerverbindungoffiziere* [air liaison officers] or *Flivos*. The *Flivos* proved their worth when brought to full flower in 1943-1944. But during the Spanish Civil War, the *Flivos* could not affect integrated CAS, and had a strictly liaison role. Not the least of their problems was that the army and Luftwaffe did not have common radio frequencies.[41] General Deichmann makes clear that prior to the Spanish Civil War the Luftwaffe had intended to strike battlefield targets through "indirect support" of rear areas and enemy armament industries. In Spain Diechmann states that even outdated fighter planes "had been used with decisive results to participate in ground combat brought the whole problem [of army support] into the foreground."[42]

[37] Corum, *The Luftwaffe*, 216.
[38] Lee Kennet, "Introduction," *Case Studies in the Development of Close Air Support*, ed. B.F. Cooling, 40-41. See also, Corum, *The Luftwaffe*, 196.
[39] Corum, *The Luftwaffe*, 194.
[40] Corum, *The Luftwaffe*, 194 and 197. Page 194 details the Nationalist failures, and page 197 relays how they coordinated better against Bilbao.
[41] Murray, "The Luftwaffe," *Case Studies in the Development of Close Air Support*, ed. B.F. Cooling, 79.
[42] Diechmann Study, 33.

Luftwaffe Combat Lessons Learned from the Spanish Civil War

Of all the experience gained by the Condor Legion in Spain, it was that pertaining to the methods of tactical air employment which was most significant and most far-reaching in its effects.

-- Luftwaffe General Karl Drum, Condor Legion Commander

It is clear the Luftwaffe, and indeed the entire Wehrmacht, derived many tactical and operational lessons from combat during the Spanish Civil War. The greatest benefits they derived were in technological assessments of their weapons systems, the combat experience gained for leaders and the force as a whole, and in their development of CAS tactics and doctrine.[43]

Although initially husbanded by the leadership in Berlin, the Ju 87 *Sturzkampfflugzeug* or *Stuka* dive-bomber became "renowned as the most accurate weapon of the Spanish Civil War - the only aircraft that could routinely hit point targets."[44] A Condor Legion favorite, armed with 550 or 1,000-pound bombs, the *Stuka's* purpose-built dive-bombing capabilities made it extremely formidable during its baptism in combat.[45] Senior Luftwaffe leaders were sensitive to its vulnerability to ground fire and limited the number of aircraft sent to Spain with an initial deployment of only three aircraft.[46] The Luftwaffe wisely rotated crews to spread the experience base and employed it in an interdiction and CAS role.[47] Also of note is the Luftwaffe leadership's conception of the *Stuka* at this stage. The *Stukas,* "later the symbol of German close army support, were at the time of the war's [World War II] outbreak considered part of the strategic bombing force."[48] A key element of the blitzkrieg's punch, what historian Barry Posen called the "precision guided munition of its day" cut its teeth in Spain.[49]

The Ju 87 in Spain widened the Luftwaffe's acceptance of and belief in "the efficiency of the close air support method."[50] It is an irony of war that the Luftwaffe's

[43] Murray, "The Luftwaffe," *Case Studies in the Development of Close Air Support,* ed. B.F. Cooling, 75.
[44] James S. Corum, *Wolfram von Richthofen – Master of the German Air War*, (Lawrence, KS: University of Kansas Press, 2008), 144.
[45] Corum, *The Luftwaffe*, 204.
[46] Murray, "The Luftwaffe," *Case Studies in the Development of Close Air Support,* ed. B.F. Cooling, 76.
[47] Smith, *Close Air Support*, 48.
[48] Muller, *The German Air War in Russia*, 19.
[49] Posen, *The Sources of Military Doctrine*, 213.
[50] Corum, *Wolfram von Richthofen*, 149.

initial sensitivity about the Ju 87's vulnerability to ground fire eventually found credence deep in Russia. But in the early years of World War II, the aircraft's severest trial came in the air-to-air arena. The Luftwaffe did not face much of a threat in this realm in Spain, as even the dated Henschel Hs 123 biplane dive-bombers proved effective in the low threat environment.[51] Although a highly valuable combat experience, there were limits to the test that the Germans faced in Spain. More than any other combatant, however, the Germans were committed to drawing lessons in an unencumbered and open-minded way.

Overall, CAS historians agree that on the eve of the World War II, "because of their Spanish War experience, the Luftwaffe in 1939 was the best-trained force for close air support operations in the world."[52] Due to the methodical approach the Luftwaffe took to Spanish Civil War operations, and their wise decision to spread the experience base, they had a "tremendous advantage at the start of World War II."[53] Theirs was a seasoned force of professionals who gained much confidence in their weapon systems and doctrine. Moreover, the Germans had a clear-eyed conception of the link between battlefield success and the cycle of drawing and passing on the pertinent lessons.

The Chief of the Luftwaffe General Staff, General "Jeschonnek realized that the mission could at times tip the balance . . . he stressed the need for the Luftwaffe and Army commands to work closely together [and this] spirit of cooperation . . . brought dramatic results in the campaigns to come."[54] This was in stark contrast to the contemporary views of air - ground teamwork in the US and other nations that soon faced the Germans in battle.

The only major shortcoming in the German CAS arena at this stage, was the fact that the Luftwaffe could not solve the challenge of supporting highly dynamic and fluid army maneuvers. This would be exacerbated by the fast pace and "rapidity" of mechanized warfare.[55] This left the Germans short of fully integrated CAS, but must partially explain why they were driven to innovate in this regard.

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[51] Smith, *Close Air Support*, 34, 48. Smith states the Hs 123 retained a niche after obsolescence as a dive-bomber, "during the Blitzkrieg and later in Russia as a ground attack aircraft."
[52] Corum, *The Luftwaffe*, 223. See also Murray and Muller.
[53] Corum, *Wolfram von Richthofen*, 149.
[54] Muller, "Close Air Support" *Military Innovation in the Interwar Period*, ed. by Murray and Millet, 163. See Chapter 3 for exposition.
[55] Murray, "The Luftwaffe," *Case Studies in the Development of Close Air Support*, ed. B.F. Cooling, 79.

Compared to other nations on the eve of World War II, however, the German *Heer* - Luftwaffe team had achieved the pinnacle of the CAS state of the art. "In terms of conducting close air support and liaison with the army, the Luftwaffe of 1941 was about two years ahead of the British and Americans."[56] The lion's share of this credit goes to one man, Wolfram von Richthofen. The cousin of the famous "Red Baron," the less well-known von Richthofen's efforts at raising German's CAS capability had, by the eve of World War II created a force that was set to shock the world.

Key Innovator of Close Air Support: Germany's Wolfram von Richthofen

Nothing is quite so demoralizing. German aviation is going to be a terrible menace for you French . . . your generals are incredibly stupid or short sighted, and you are going to pay dearly for it. They don't realize that aviation is changing the forms of war.

-- Spanish Loyalist General to a French observer - 1938

Background

Wolfram von Richthofen proved a key leader and innovator who vastly raised the level of German operational art and the tactics of air-ground cooperation prior to and during World War II. His name "was to become synonymous with the blitzkrieg."[57] In many respects, he pioneered the concepts that developed into fully integrated CAS in 1943-1944.

Commissioned on the eve of World War I into the cavalry, he became a pilot in 1918 and flew combat over the trenches. Like many German officers, he had a penchant for the technical aspects of the military and focused on mechanical problem solving from an early age.[58] Later he put his technical skills to use in aiding the Luftwaffe's aircraft development in the 1930s. Fortunately, for the state of the art of German air-ground coordination, von Richthofen stood apart from many of his peers in that he "did not allow his preconceptions to override operational reality."[59]

Germany had many strong, staunch officers and probably had more than her share of brilliant tacticians. However, von Richthofen stood apart. Nicknamed "The Tartar,"

[56] Corum, *Wolfram von Richthofen*, 260.
[57] Smith, *Close Air Support*, 47.
[58] Corum, *Wolfram von Richthofen.*
[59] Muller, *The German Air War in Russia*, 19.

by his staff for his "ruthless approach to warfare," von Richthofen had a constant focus and drive toward the full development of CAS, among other tactical improvements.[60] This was at a time when few others could even conceive of air-ground synergy.

Von Richthofen was born in 1895 into a noble Prussian family on their estate near the city of Striegau, Silesia, in modern Poland. Many of the family's military exploits were renowned throughout Germany. Von Richthofen's uncle, General Manfred von Richthofen, later became his adoptive father. Known to the family as "Onkel Manfred," he served as an aide to Kaiser Wilhelm and was known as the "handsomest officer in the army." Von Richthofen's fourth cousin, also named Manfred, was "The Red Baron," whose fighter pilot exploits in World War I made him a legend. Historian and Wolfram von Richthofen biographer James S. Corum finds it ironic that he "had, by far, the greater impact on twentieth-century history" vis-à-vis his acclaimed cousin, yet he remains far less well known.[61]

Combat Chronology

Wolfram von Richthofen received his commission in the Fourth Silesian Hussar Regiment, part of the 5th Cavalry Division, just prior to World War I. He earned the Iron Cross second-class for bravery in the Champagne region during Germany's titanic assault on France at the outset of the war. Von Richthofen fought in multiple desperate battles as the tactics of trench warfare came to dominate the fighting, during the transitional period known as "the race to the sea." Prior to his transferring to the *Luftstreitkrafte,* or Imperial German Air Force, he served on the eastern front. As World War I progressed, young von Richthofen saw the cavalry's role diminished into extinction. He found his forces utilized more and more in the traditional infantry or military police role and he subsequently switched to aviation, just like his famous cousin.[62]

Von Richthofen transferred into the *Luftstreitkrafte,* completed flight training, and was assigned to fly single seat fighters in his acclaimed cousin Manfred "the Red Baron" von Richthofen's *Jagdgeschwader* (fighter wing) 1. It was a twist of fate that young Wolfram von Richthofen's first combat mission was his legendary cousin's last.

[60] Corum, *Wolfram von Richthofen*, 11.
[61] Corum, *Wolfram von Richthofen*, 1.
[62] Corum, *Wolfram von Richthofen*, 48-49 and 52.

Although the specifics of "the Red" Baron's" shoot-down and death remain controversial, his mission that day was to lead a flight of five Fokker Dr 1 triplanes in response to reports that British aircraft had flown over the German lines. The green Wolfram flew as one of his wingmen.[63]

Von Richthofen continued flying combat missions right until the end of the war. He tallied eight air-to-air kills, thus achieving the vaunted title "ace" and received the Iron Cross First Class. Corum notes he engaged in air-to-air combat and aerial reconnaissance missions, but not ground attack. Wolfram von Richthohen flew Fokker D.I tri-planes and later D.VII fighters, but not what the Germans termed "infantry airplanes." These were ground attack aircraft, such as Halberstadt CL IIs, Hanover CL II/ IIIs or the all metal Junkers JIs / CLs.[64]

In May 1918, Wolfram assumed temporary command of the Fokker D.VII squadron he was assigned to, *Jasta 11,* a member of the famed group, *Jagdgeschwader 1* known to history as "The Flying Circus." Thus, at the tender age of 23, von Richthofen was a veteran of both infantry and aerial combat. Moreover, he had commanded both German troops and aviators, as he had briefly been in command of a cavalry squadron prior to his transfer to flying. It was nearly twenty years before von Richthofen would see combat again, this time in a very different role than he had played chasing Allied aircraft over the trenches in World War I. [65]

Von Richthofen chose to remain in the military after the war. He attended the prestigious Technical University of Hanover and received his graduate degree in engineering in 1923.[66] Promoted to *Oberstleutnant,* or Lieutenant Colonel, von Richthofen's next combat assignment came in 1936 during the Spanish Civil War. He served as chief of staff for Major General Hugo Sperrle's Condor Legion. It was in Spain that Wolfram first focused on and developed coordination of air power with ground assault, albeit with Spanish Nationalist troops, as the German ground troop commitment was "nil."[67]

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[63] Corum, *Wolfram von Richthofen*, 65-66.
[64] Corum and Muller, *The Luftwaffe's Way of War*, 66. See also Corum, *Wolfram von Richthofen*, 64-70.
[65] Corum, *Wolfram von Richthofen*, 70. See also Terry C.Treadwell and Alan C. Wood, *The First Air War, A Pictoral History 1914-1919*, (London, UK: Brassey's Ltd., 1996) for WWI details.
[66] Corum, *Wolfram von Richthofen*, 38, 84.
[67] Van Creveld, *Air Power and Maneuver Warfare*, 29. See also Hallion, *Strike from the Sky*, 102.

Von Richthofen was a tireless, sharp, and demanding chief of staff who served his combat "apprenticeship . . . [in Spain, becoming] the world's leading exponent of close air support."[68] Perhaps von Richthofen's key prescient contribution was as one of the first leaders of any air force to realize "that the theoretical musings on strategic bombing and the political and military realities of the Spanish Civil War had little in common."[69] Near the end of the conflict, von Richthofen took command of the Condor Legion. The air support provided by the Condor Legion proved crucial, particularly in the Nationalist's final drives to victory over the Republicans. Berlin was most impressed with Wolfram; he returned to Germany a Major General and national hero in great demand for speeches, parades and appearances.[70]

Von Richthofen's next assignment was tailor made to his recent combat experience and capabilities. He stood up and commanded the *Fliegerkorps zur besonderen Verwendung* or special purpose division, later renamed *Fliegerkorps VIII*. This provisional air division contained 250 aircraft whose role was to provide dedicated ground support for the army.[71] On the eve of the Polish campaign, Wolfram's command included four Stuka groups, one Henschel 123 dive bomber group, one Messerschmitt 109 fighter group, a squadron of Dornier 17 reconnaissance planes, an associated Luftwaffe signals company, plus a battalion of flak guns.[72] Fate delivered Wolfram a unique opportunity in his "favorite role as a close-support expert."[73] His unprecedented air division would have a major role in the campaign plan for Poland. "There was no airman in any of the world's air forces in 1939 who could equal von Richthofen's experience in air support of ground forces."[74]

Von Richthofen commanded what evolved into *Fliegerkorps VIII* from the summer of 1939 until July 1942. The frequency, pace, and intensity of combat endured by Wolfram and his airmen is astounding and wholly difficult to grasp. In those 36 months, *Fliegerkorps VIII* flew in the following German campaigns: Poland, September -

[68] Van Creveld, *Air Power and Maneuver Warfare*, 33.
[69] Murray, "The Luftwaffe," *Case Studies in the Development of Close Air Support,* ed. B.F. Cooling, 75.
[70] Corum, *Wolfram von Richthofen*, 148.
[71] Murray, "The Luftwaffe," *Case Studies in the Development of Close Air Support,* ed. B.F. Cooling, 82. See also Corum, *Wolfram von Richthofen*, 158.
[72] Corum, *Wolfram von Richthofen*, 52.
[73] Van Creveld, *Air Power and Maneuver Warfare*, 75.
[74] Corum, *Wolfram von Richthofen*, 157-158.

October 1939; France, May - June 1940; the Battle of Britain, July - October 1940; the Balkan and Greece Campaigns, April - June 1941; and finally Operation Barbarossa, the Russian Campaign that began on 22 June 1941. Wolfram led his vaunted *Fliegerkorps VIII* in Russia against the Red Army and the Soviet Air Force (VVS) from the campaign's outset until he assumed command of *Luftflotte 4* on 4 July 1942.[75] Of the above campaigns, only the Battle of Britain and Barbarossa in Russia had not produced victory for the *Wehrmacht*.

During the pivotal battle of Stalingrad, von Richthofen kept a diary, with two of the entries focused on CAS. In an entry dated 1.11.42, he was upset that the Russians "could have been successfully thrown back across the Don [River] if his efforts to attack from the air would have been exploited properly by ground forces. Their advances, however, were either sluggish in execution or uncoordinated and sometimes unsupportable when his aircrew had to drop ordnance within 'hand grenade' distance from own troops." In another entry dated 14-15.9.42, von Richthofen described how his "Stukas …support infantry and cover the exposed flank of a deep penetrating [enemy] tank force."[76]

Von Richthofen's final campaign began in June 1943 when he assumed command of *Luftflotte 2.* This was in the late stages of the ill-fated Italian campaign, where Wolfram faced the western Allies for the first time since Dunkirk, but this time on vastly different terms. After the fall of Rome in early June 1944, the Germans retreated in good order to the "Gothic Line."[77] As the Allies drove north to engage the Germans in the Apennine Mountains, Wolfram's staff noticed a considerable decline in their leader's health. Diagnosed with a brain tumor, Wolfram went to the premier neurological institute in the Third Reich at Bad Ischl, Austria, where he underwent surgery in October. Initially hoped that he would recover, it soon became evident that his condition was terminal. Von Richthofen was relieved of his command, transferred to the Leaders Reserve, and passed away at Bad Ischl, Austria on 12 July 1945. Just over one year earlier, von Richthofen's oldest son, also named Wolfram, was killed in action while

[75] Corum, *Wolfram von Richthofen*, chapters 6-11.
[76] Wolfram von Richthofen Diary, courtesy of SAASS Professor Richard Muller. Translated by Oberstleutnant Lothar Sauermann Lw, student at SAASS.
[77] Thomas E. Greiss series ed., *West Point Atlas for the Second World War,* (Garden City Park, NY: Square One Publishers, 2002), plate 51. See also Corum, *Wolfram von Richthofen*, 361.

piloting a Focke-Wulf Fw 190 over Romania. It was fitting that young Wolf had volunteered for a ground attack assignment.[78]

Von Richthofen attained rank steadily throughout his career, with greater trust and responsibility placed upon him at a considerably younger age than many of his former peers. By 1943 von Richthofen was a *Generalfeldmarschall*, and the second youngest German ever to achieve that lofty rank.[79] The chronology of his promotions and command billets charts a rarefied military career. Von Richthofen's greatest contribution proved his innovation and refinement of the world's first attempt at truly integrated air-ground teamwork.

Wolfram von Richthofen's Influence on German Operational Art (1936-1944)

It is possible one could infer from the previous section that Wolfram focused solely on CAS, or that he did not contribute to German tactical and operational refinement in any other realms. This was not the case, as his open mindedness coupled with tactical brilliance proved a great strength. As a prescient tactical thinker and innovator, he made many contributions that were of great tactical and operational significance to the Luftwaffe and indeed the *Wehrmacht*. His biographer, James S. Corum, calls him a "true visionary . . . [if he had returned to civilian life after World War I] he most certainly would have won an important place in history as an aircraft engineer and designer."[80] At the tactical and operational realm of the military art, Richhofen was a first rate innovator who combined both Clausewitzian genius concepts of *coup d'oeil* and determination.[81]

In the mid 1930s, when most of the world's air forces, including the Luftwaffe, focused mostly on biplanes, von Richthofen "was supporting research in rocket planes and jet engines." He became the head of aircraft development at the Luftwaffe Technical Office and coordinated aircraft projects that formed almost the entirety of the Luftwaffe's inventory in World War II.[82] The successful Messerschmitt (Me) 109, Me

[78] Corum, *Wolfram von Richthofen*, 363 and 367.
[79] Corum, *Wolfram von Richthofen*, 36.
[80] Corum, *Wolfram von Richthofen*, 13.
[81] Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret, (Princeton, NJ: Princeton University Press, 1976), 102-103.
[82] Corum, *Wolfram von Richthofen*, 13 and 102-110.

110, Dornier (Do) 17, Henkel (He) 111 and the Junkers Ju 87 aircraft were all developed under his watch. Von Richthofen conceived the rocket plane design in these years that eventually led to the Me 163 Comet interceptor.[83] Von Richthofen did not aid the Heinkel firm in the specific development of jet technology that ultimately led to the 1939 success of the world's first jet aircraft, the He 178. However, it was von Richthofen's framing of the requirement regarding such aircraft that helped foster the jet age's fruition. More than simply crediting him for developing the Luftwaffe, Corum is unsparing in his praise for von Richthofen's contribution to aviation history. "Von Richthofen issued the contracts that made possible the development of the jet engine, the V-1 rocket (the first practical cruise missile), and the larger V-2 rockets. His work of that period was an important part of the foundation for airpower technology in the later twentieth century."[84] He affected much more than simply CAS.

This is not to say that von Richthofen was infallible. General Diechmann points out a highly ironic stand von Richthofen took. "When . . . von Richthofen, in 1934 took over the Development Branch of the Technical Office the idea of a dive-bomber was killed. Richthofen had stated categorically: 'Diving to a level below 6,600 feet is complete nonsense.' . . . [Luckily for German CAS] a few engineers in Richthofen's branch who did not agree with their chief in this matter had admittedly continued to make experiments in this direction."[85] Another mistake von Richthofen made was his advocacy of the Do 19 four-engine bomber that proved to be a terrible design.[86]

But the streaks of tactical and combined arms insights are evident. When viewed through a CAS lens, he simply has no peer. During the late stages of World War II, then-Lieutenant Colonel Keith B. McCutcheon USMC, the Marine's key CAS facilitator, credited the Germans as the first innovators of the tactic.[87] Perhaps von Richthofen's unique combat experiences on the ground and in the air in World War I influenced his

[83] Corum, *Wolfram von Richthofen*, 110.
[84] Corum, *Wolfram von Richthofen*, 374.
[85] Diechmann Study, 35.
[86] Corum, *Wolfram von Richthofen*, 107.
[87] The Keith B. McCutcheon papers (undated letter), USMC Grey Research Center, Quantico, VA. See also the General Quesada oral interview with Lieutenant Colonel Long 12 May 1975, Elwood R. Quesada Papers – Oral History Box 1, USAHEC - MHI. General Quesada states "It was not our mission to participate that close in battle. However, after a matter of just days [post D-Day] it was just obvious that there was a lot that we could do."

thinking. For most of his career, he was focused on the detailed integration of air and ground forces of the *Wehrmacht*.

The specifics of his forward thinking in regards to CAS and other tactics read like a manual for improving combat synergy and tactical success. According to historian Richard Hallion, beginning in the Spanish Civil War, "Von Richthofen established a control network as well as a supportive climate and environment conducive to good ground support. He arranged for air commanders to become intimately familiar with the front before them, created procedures for the issuance of orders integrating both ground and air needs via liaison between army headquarters and the Condor Legion's own headquarters, assigned air liaison officers to the front and to army headquarters, and established a tradition of senior air commanders being on the ground at the focal point of ground operations during an actual offensive or battle."[88]

The main shortcoming with the German CAS system in Spain and during the early stages of World War II was air-ground communications. The primary reason von Richthofen sought out hilltop command post vantage points in Spain, was to allow him to observe the progress of the battle and yet still communicate with his airfields. [89] Through this method, Luftwaffe commanders communicated with whom the modern US military terms an airfield "air boss."[90] At the time, they were unable to communicate directly to the aircraft. It would seem a logical next step to improve the miniaturization of the radio sets, radio signal strength, or radio technology in general to solve these challenges. These challenges remained until 1944. Although cumbersome and delayed, the communication system von Richthofen worked out in Spain became the Condor Legion's standard operating procedure. This precedent led to great strides in air-ground communication and coordination, which some have termed "revolutionary."[91] It had the ancillary and additional advantage of facilitating Luftwaffe commanders in the attainment of what is today termed "situational awareness." This situational awareness went beyond

[88]Hallion, *Strike from the Sky*, 113. Luftwaffe General Wilhelm Spiedel corroborates this in the Karlsruhe collection at USAFHRA, document K 113.106-151, 18. General Spiedel states that CAS responsiveness was "40 minutes or slower" in the German assault on France in 1940.
[89] Corum, *Wolfram von Richthofen*, 131-132.
[90] Author's experience.
[91] Corum, *Wolfram von Richthofen*, 131-132.

simply the air picture, and facilitated an understanding of the tactical situation on the ground campaign as well.

As during the late stages of World War I, the lack of direct voice communication between the infantry, who had current tactical situational awareness of the ground picture, and the aviators trying to support them overhead, drove the need for a primitive system of panels, flags, smoke, and a variety of signaling devices. This system with its 1918 technology was utilized once again. Multiple historians state that this was simply relearning the lessons and reapplying the tactics of late stage World War I, but historian Richard Muller states that at the beginning of the Spanish Civil War, German attack aviation had indeed regressed.[92]

The timeliness and free-flow interchange fostered by clear voice communication is critical to harness the immediate benefits of air-ground synergy.[93] The Germans were the first who finally leapt beyond the obvious limitations of one-way communications, but not prior to early 1944.[94] Due to CAS communication limitations prior to 1944, fratricide from friendly air strikes proved a pervasive danger. It occurred in the Spanish Civil War and throughout World War II, via errant bombing, strafing, or simply due to confusion regarding proper targeting. This affected all of the combatants who attempted CAS and remained unresolved until effective air-ground radio, radio procedures, and CAS training were fully ingrained.[95] This was especially true of highly dynamic and fluid tactical situations, but also when utilizing bomb-line tactics. Such an errant fratricidal bomb-line air strike killed Lieutenant General Leslie McNair USA, on 25 July 1944. He was one of the three highest-ranking casualties the US suffered in all of World War II.[96]

Beginning in Spain, von Richthofen focused on creating what CAS historian Richard Hallion terms the "supportive climate and environment conducive to good

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[92] Hallion, *Strike from the Sky*, 113. See also Corum, *The Luftwaffe*, 196. German attack aviation in 1933-1934 is termed a "regression" due to the lack of dedicated aircraft types being developed by Muller in *The German Air War in Russia*, page 17.

[93] Author's experience as a battalion air officer and FAC.

[94] Muller, The *German Air War in Russia*, 222.

[95] Corum, *The Luftwaffe*, 194.

[96] Max Hastings, *Overlord D-Day and the Battle for Normandy*, (New York, NY: Vintage Books, 1984), 254. See also Corum, *Wolfram von Richthofen*, 177. For greater depth on McNair's death see chapter 3. For details of the death of Lieutenant General Buckner, see E.B. Sledge, *With the Old Breed at Peleliu and Okinawa*, (New York, NY: Presidio Press, 1981), 329.

ground support." Some of this could have been due to his roots as a ground officer. Stepping back, it may be explainable by Germany's continental, if not terrestrial focus, referenced previously in Murray's cogent analysis, "no matter what successes German air power might achieve, if the ground battle were lost, Germany was lost."[97] As the genius of von Richthofen's air power and CAS philosophies become clearer with a full dissection of their roots, they are still remarkable, and indeed marked a clear divergence from the world's renowned air power advocates of the period.

"The Luftwaffe was one of the few air forces in the late 1930s that even considered the problems of close air support and had recognized that an air force could render important help to ground troops in critical situations."[98] Von Richthofen harnessed both the pressures of battle and subordinate leaders' ideas and initiative to channel tactics down new paths. This was in keeping with the best Wehrmacht tradition; to learn tactical and operational lessons much faster than their enemies did.

"[CAS] was a mission that fit the Luftwaffe's comprehensive approach to warfare, as well as the culture of joint operations that was a central part of the Luftwaffe's mind-set."[99] Despite operational and tactical brilliance shown in certain portions of the Germans conduct of both of the world wars of the twentieth century, their strategic conceptions and the layers of their dysfunction in this regard is another matter entirely. Despite the Germans' immense strategic challenges, contemporary western officers can learn much from the historic record of the Wehrmacht's joint teamwork and ethos. "Most German officers seem to have felt that the lives of aircrews and ground troops, and the successful completion of military operations, were more important than the narrow concerns of their own service."[100] This contrasts sharply with the 1936 thoughts of US Army Air Corps General Frank Andrews who "took strong exceptions to the term air-ground military team. He could understand how observation aviation could be part of the air-ground team, but he argued that pursuit, attack, and bombardment received no assistance from the ground forces in their combat operations. The War

[97] Murray, "The Luftwaffe," *Case Studies in the Development of Close Air Support*, ed. B.F. Cooling, 73.
[98] Murray, "The Luftwaffe," *Case Studies in the Development of Close Air Support*, ed. B.F. Cooling, 79.
[99] Corum, *The Luftwaffe*, 248.
[100] Murray, "The Luftwaffe," *Case Studies in the Development of Close Air Support*, ed. B.F. Cooling, 104.

Department General Staff did not agree . . ."[101] This is explainable due to the near fanatic obsession with achieving US Army Air Forces service independence, and exposes the philosophical differences between similar services of the world during the late 1930s.

Wolfram began to channel both tactical theories and successful practices of CAS and the German army - Luftwaffe air-ground team during the Spanish Civil War. He built upon his reputation as a "pioneer in effective joint operations. Thanks to his depth of technical knowledge, he brought the art of close air support for ground troops to a level not seen before in war."[102] It was thanks to far more than just his technical knowledge.

Wolfram von Von Richthofen's CAS Prescience and Tactical Innovations

> *Stukas! . . . Squadron upon squadron rise to a great height, break into line ahead (Reihenformation) and there, there the first machines hurtle perpendicularly down, followed by the second, third - ten, twelve aeroplanes are there. Simultaneously like some bird of prey, they fall upon their victim and then release their loads of bombs on the target. We can see the bombs very clearly. It becomes a regular rain of bombs, that whistle down on . . . the bunker positions. Each time the explosion is overwhelming, the noise deafening. Everything becomes blended together; along with the howling sirens of the Stukas in their dives, the bombs whistle and crack and burst. . . We stand and watch what is happening as if hypnotized; down below all hell is let loose! At the same time we are full of confidence . . . and suddenly we notice that the enemy artillery is no longer shoots . . .*
>
> *--Sergeant Prumers, 1st Panzer Division, 1940*

Hindsight allows the military historian to view the promise and peril faced by soldiers of the past with detached clarity. Viewing Wolfram von Richthofen over 65 years later, it becomes clear how prescient many of the concepts he innovated or refined truly were. Immediately upon arrival in Spain as a Lieutenant Colonel in 1936, he displayed the ultimate in forward thinking. He cabled Berlin "the Spanish have to win this war for themselves" and advised that the Germans not send too much assistance.[103] The Nationalists may have received first-rate air and armored support from their Germans

[101] Frank Futrell, Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force 1907-1960, (Maxwell AFB: Air University Press, 1989), 84.
[102] Corum, *Wolfram von Richthofen*, 10.
[103] Corum, *Wolfram von Richthofen*, 120.

allies, but as is quite apropos for the US military in 2011, von Richthofen discerned immediately that the conflict must ultimately be decided by the Spanish themselves. Multiple historians fault von Richthofen for not attempting to raise his gaze above the operational level of war, but in this instance he had a firm grasp.

Innovative Flank Protection from the Air

Von Richthofen was the tactical genius to first propose, convince the army, and then execute the role of airborne flank protection of ground forces. The first time his *Fliegerkorps VIII* innovated this was during the invasion of France in 1940. Yet again, von Richthofen deserves great credit for originating a concept adopted by many other nations' militaries in conflicts of the 20th century and beyond.[104]

The Allies began to utilize this tactic in 1944. Fostered and developed by the US Army Air Forces Major General "Pete" Quesada, "Armored Column Cover" as the USAAF dubbed it, was a phenomenal air-ground tactic conceived just prior to the St. Lo breakout, during the Normandy campaign.[105] The Marine Corps fully harnessed the best of this tactic on Luzon under the auspices of their CAS innovator and leader Lieutenant Colonel Keith B. McCutcheon.[106] However, von Richthofen and the Germans get full credit for innovating and then refining the concept. Neither of the leading Allied CAS advocates was conducting flank protection from the air any earlier than 1944.

It is one thing to innovate a new tactic, technique, or procedure, (TTP) but it is wholly another to convince leaders, especially the senior leadership of another service, to attempt it in combat. Von Richthofen's reputation preceded him in his attempt to convince panzer leaders to conduct flank protection from the air. Unfortunately for the Allies, the Wehrmacht officer corps was full of men that had such intellectual flexibility and aggressiveness. Historian Bradley Meyer terms German tactical innovation in World War I as "bubbling up from below" and unquestioningly the trait carried over to World War II.[107] This is a credit not only to junior officers and tacticians who conceive new

[104] Author's experience.
[105] General Quesada, oral interview with Lieutenant Colonel Long 12 May 1975, Elwood R. Quesada Papers – Oral History Box 1, USAHEC - MHI. See chapter 2.
[106] The Keith B. McCutcheon papers (undated letter), USMC Grey Research Center, Quantico, VA. See chapter 3.
[107] Bradley J. Meyer, "Operational Art and the German Command System in World War I" Ohio State University PhD dissertation, 1988, 400.

ideas, but to the German leadership who fostered said conceptions. Many of the Allied nations' militaries did not foster this spirit early in World War II, but combat's exigencies eventually drove the spirit to the fore.

The Luftwaffe's protection of an armored unit's flank led directly to unprecedented tactical options, speed, and situational awareness for the air-ground team. This is the essence of modern "maneuver warfare." At the time, it was understandable that even a soldier as revered and respected as Field Marshal Gerd von Rundstedt needed convincing. On 16 May 1940, during the German drive across France, von Richthofen was the tactical and operational genius who had the gravitas to convince the army. "Von Richthofen assured a doubtful army staff that his VIII Air Corps could protect the flanks of the advance. The advance resumed and von Richthofen made good on his promise. The VIII Air Corps reconnaissance aircraft spotted French divisions moving to counterattack and the air corps' *Stukas*, bombers and fighters relentlessly bombed the French troop columns, highway traffic, and tank units that appeared on the flanks. The French Ninth Army was effectively routed by the air attack."[108]

The First Tactical Air Coordinator (Airborne)

Von Richthofen broke ground in many varied directions as a tactical and operational innovator. Much of his tactical focus was in areas of air-ground teamwork. He served in a capacity that would today be termed a Tactical Air Coordinator (Airborne) during the German invasion of Poland. He grew highly dissatisfied with the air-ground inertia involved with the *Kolufts* and *Flivos* systems as they stood at the outset of the campaign. As stated above, they served as liaisons at high echelons of command and were unable to attain and pass to the Luftwaffe clear concepts of ground maneuver. This fact, combined with frustration over fratricidal incidents, partly caused by these shortcomings, drove von Richthofen to fly over the battlefield in small Fieseler Fi 156 *Storch* light observation aircraft. He had set yet another precedent, and soon his peers followed his example in attempting to affect air-ground cohesion. "In order to overcome some of the confusion, senior Luftwaffe commanders started imitating von Richthofen and flying around the battlefield and personally conducting reconnaissance and liaison

[108] Horne, *To Lose a Battle,* 506-507.

with the senior army commands."[109] The fact that officers took to the air greatly facilitated their situational awareness. This has a tactical derivative in the modern US DOD: the role of Tactical Air Coordinator (Airborne) or TAC (A).[110]

Turning *Flivo* Liaison Officers into Terminal Air Controllers – The Key to Integrated CAS

Von Richthofen exerted great influence over what developed into the world's first terminal air controllers. Beginning in the Spanish Civil War, Von Richthofen continually refined and adopted the Luftwaffe concept of the *Flivos* system to better suit the needs of the Luftwaffe and, concurrently, the army. This was the key in the *Wehrmacht* eventually becoming the world's first practitioners of fully integrated CAS on the eastern front with Russia in early 1944.[111]

The *Flivos* descended from Luftwaffe liaison officers assigned to army headquarters. On the eve of World War II, they were "fairly junior [Luftwaffe] officers with a communications team who were attached to army corps headquarters and at the divisional headquarters of the panzer and motorized divisions."[112] The *Flivos'* main role at this stage was to coordinate the needs of the Army with the capabilities of the Luftwaffe, much like today's USAF Air Liaison Officers (ALO) and USMC Air Officers at battalion, regiment and higher echelons. The *Flivos* of 1939 did not communicate directly to attack aircraft as modern Forward Air Controllers (FAC) and Joint Terminal Attack Controllers (JTAC) do. Von Richthofen was the key innovator who morphed their role, unleashing the full capabilities of integrated CAS.

As has been relayed, von Richthofen and other key Luftwaffe leaders took unprecedented steps to raise the level of coordination between their service and the army. Much of this was due to radio limitations of the mid 1930s, but there were organizational challenges as well. In 1939 the *Flivos*, and the echelon of Luftwaffe liaison senior to them at field army headquarters, the *Kommandeure der Luftwaffe* or *Koluft* conducted

[109] Corum, *Wolfram von Richthofen*, 176.
[110] See Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms*, 2010.
[111] Muller, *The German Air War with Russia*, 222-223.
[112] Corum, *Wolfram von Richthofen*, 162.

liaison, but "had no authority to order attack missions in support of the army."[113] In the best case scenario, Luftwaffe and Army senior headquarters were collocated, thus negating many liaison challenges and facilitating both solid planning and smooth execution. Modern service personnel are familiar with command post exercises in training, where coordination between collocated headquarters is simplified. At the outset of operations, many jump-off points of different units and headquarters are in such geographic proximity that coordination is simplified.

It is reasonable to infer that von Richthofen was aware that old solutions for roles like the *Flivos* would not suffice in dynamic, mechanized war. Germany had made great strides in military mechanization and their experience in the Spanish Civil War meant they conducted as near a full dress rehearsal, minus large ground forces, as possible.

Despite the fact that the five-week conquest of Poland had been relatively short and successful from the German perspective, it is a tribute to the professionalism of their General Staff, that the Wehrmacht spent the lull after Poland prior to their invasion of France culling and applying tactical lessons learned.[114] "Stuka units and armored formations exercised relentlessly, attempting to perfect methods of identification, liaison, and communication."[115]

The *Flivos's* limited role of headquarters liaison hamstrung the air-ground potential of the *Wehrmacht*. Here again, von Richthofen played a key role. The "greatest lesson learned in the Polish campaign… was the importance of full cooperation of army and Luftwaffe units [and for]… Luftwaffe and army commanders to plan and work together . . . this lesson very likely came directly from von Richthofen." It was clear that this lack of coordination was hampering the air-ground team to a slow jog when the prescient leaders, Von Richthofen foremost among them, knew the Wehrmacht was capable of a full sprint. "The communications sufficed if the Luftwaffe had a day to plan the operations . . . but under the pressure of highly mobile operations the liaison system had often broken down."[116]

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[113] Corum, *Wolfram von Richthofen*, 162.
[114] Murray, "The Luftwaffe," *Case Studies in the Development of Close Air Support*, ed. B.F. Cooling, 81.
[115] Muller, "Close Air Support" *Military Innovation in the Interwar Period*, ed. by Murray and Millet, 181.
[116] Corum, *Wolfram von Richthofen*, 176.

The vast majority of the world's air-ground teams have never gone beyond this stage. After an exhaustive review of CAS literature, it appears that only the following four nations' air forces were able to accomplish CAS with even a modicum of coordination with their ground forces during World War II: the US, UK (including Commonwealth nations), the Soviet Union and Germany. Since 1945, only three nations have joined this listing, if actual combat is the litmus test: France, Israel and South Vietnam.[117]

In 1939, Von Richthofen commanded the dedicated army-support division *Fliegerkorps z. b. V* (Special Duties Air Corps) and wasted no time during the lull after Poland to attempt to affect fully integrated CAS. A major was assigned to construct dedicated communication pathways between the *Flivos* and attack aircraft in order to control the terminal control phase of an airstrike and to affect the key dialogue with individual aircraft in the conduct of CAS. The major received armored cars for the *Flivos* use, with radios capable of coordination with tanks.[118] "In the spring, von Richthofen experimented with controlling *Stuka* attacks from the ground using his *Flivos* in their armored cars. The exercises showed promise, but a standardized system could not be worked out on short notice and this experiment would have to wait for the Russian campaign to be realized."[119]

Von Richthofen was on the verge of achieving the world's first fully integrated CAS system, incorporating all of what the modern military considers prerequisites for an effective air strike. This system did not quite reach fruition prior to Germany's assault on France in May 1940. Still, German attempts at fully integrated air-ground teamwork had come very far in the four short years since Spain. No other nation was even close to synergizing air and ground forces in 1940. The US Marines were the only other force seriously thinking and training to it ground support, but at this stage their development paled next to the Germans.

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[117] These listings are derived from the three key secondary sources on CAS in English: *Case Studies in the Development of Close Air Support,* ed. B.F. Cooling, Hallion, *Strike from the Sky* and Smith, *Close Air Support* and six months of CAS research.

[118] Corum, *Wolfram von Richthofen*, 191.

[119] Corum, *Wolfram von Richthofen*, 191. See also Murray, "The Luftwaffe," *Case Studies in the Development of Close Air Support,* ed. B.F. Cooling, 89.

In modern terms, the Germans were masters of combined arms maneuver warfare. Their utilization of unprecedented levels of mechanization and air-ground teamwork destroyed the allies in France in less than six weeks. From here on, "Wolfram von Richthofen's name was to become synonymous with the blitzkrieg."[120]

Von Richthofen's Operational Acumen and Strategic Myopia

A final tactical innovation von Richthofen pioneered went far beyond the Luftwaffe in its effect. During the Spanish Civil War, the Nationalists had sparse artillery. Due to the lack of an air threat, von Richthofen took it upon himself to augment the Spanish with his 88mm anti-aircraft flak batteries. These weapons proved highly successful in the direct-fire ground role, becoming the bane of Allied armor and infantry throughout World War II. They were the key to many German victories in the first years of the war. "Von Richthofen [was] proud of his idea to deploy the flak guns in the ground role."[121]

In summation, von Richthofen was one of the most prescient proponents of combined arms in the twentieth century. "Hitler took a great liking to von Richthofen, whom he considered one of his best generals."[122] A safe assumption can be made that Hitler was most comfortable with generals who did not delve deeply or criticize the strategic direction of the Third Reich, when only he and he alone drove it. All of the above paints the picture of a fantastic tactician, leader, and expert in the operational conduct of campaigning.

Despite his tactical and operational genius, no sources point to von Richthofen having a firm grasp of the situation at the strategic level of war. As von Richthofen's promotion to high rank and responsibility came during World War II, one would expect a leader of this stature, intellect, and wisdom to have developed a wider lens. Horst Boog captures the essence of von Richthofen's strategic myopia as follows:

> Suffering under the stress of a continuous load of staff work, general staff officers who later rose to important command and staff positions did not develop a broad, strategic view of the war situation. Field Marshall von Richthofen was a good example of this limited view. Von Richthofen had

[120] Smith, *Close Air Support*, 47.
[121] Corum, *Wolfram von Richthofen*, 130.
[122] Corum, *Wolfram von Richthofen*, 179.

> received a typical military technical and academic training and was a master in the field of close air support of the army. Yet his personal diary contains hardly any indication that he attempted to understand the war situation as a whole. The dangers arising from this narrow mindedness were recognized toward the latter part of the war, and the courses at the Air War Academy were extended to broaden the outlook of the general staff officer candidates. These endeavors came too late to have any effect.[123]

Wolfram von Richthofen was not the only German *Generalfeldmarschal* or senior Luftwaffe officer who was an expert at the tactical and operational level of war, but who was "lost in the higher realms of strategy and grand strategy."[124]

Conclusion

The Luftwaffe achieved fully integrated CAS prior to any other military in early 1944 by evolving one facet of their *Flivo* system. The "*Fliegerleitoffizier (Schlacht)* or air control officer-ground attack" was sent into combat on the eastern front. Historian Richard Muller describes their role: "this officer served at the focal point (Brennpunkt) of the ground battle. His duties included direct communication with the flying units, informing them of their precise targets, preventing accidental air attacks on German troops, and related tactical duties."[125] This billet description resonates precisely with the tactical role of modern Forward Air Controllers, as it does with the USMC's Air Liaison Party and the USAAFs' "armored column cover" tactics covered in depth in chapters 2 and 3.

In March 1944, doctrine followed the new German FAC billet entitled "Vereint schlagen (Strike Together)." Aptly named, the doctrine attempted CAS standardization that had not been achieved. "Past experience had shown that while certain formations, particularly Fliegerkorps VIII, enforced the use of standardized liaison and ground to air recognition procedures throughout their areas of operation, no such homogeneity had

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[123] Horst Boog, "Higher Command and Leadership in the German Luftwaffe, 1935-1945" *Air Power and Air Warfare, The Proceedings of the 8th Military History Symposium USAFA, 18-20 October 1978*, ed. by Colonel Alfred F. Hurley USAF and Major Robert C. Ehrhart USAF, (Washington, DC: Office of Air Force History, 1979), 129-130.

[124] Williamson Murray, *Strategy for Defeat, The Luftwaffe 1933-1945*, (Maxwell AFB, AL: Air University Press, 1983), xxv.

[125] Muller, *The German Air War with Russia*, 222.

prevailed over the entire front. . .”[126] Now the Germans had an effective system to call what is termed “Type I CAS” in modern terminology, they had codified doctrine and standardization, and for years had the world’s foremost pioneer of these tactics in Wolfram von Richthofen. What went wrong? Much of Germany’s challenges in World War II are beyond the scope of this inquiry, but as historian Williamson Murray states German military leadership combined “an exceedingly high level of competence on the tactical and operational side . . . [with] a complete inability to see a relationship between means and ends on the level of grand strategy.”[127]

In summary, despite leading the world in developing outstanding air-ground tactics and operational concepts from 1936 until early 1944, the Germans strategic and campaign sins came back to haunt them with a vengeance. For the Luftwaffe, General Deichmann encapsulates that its fate was sealed in 1942, when the age-old German nightmare became a reality for the second time since 1914: a prolonged two-front war. “When Germany later in 1942, found herself in a multi-front war, the strengths available to the Luftwaffe were completely disproportionate to its numerous missions.”[128]

[126] Muller, *The German Air War with Russia*, 222.
[127] Williamson Murray, *Strategy for Defeat, The Luftwaffe 1933-1945*, (Maxwell AFB, AL: Air University Press, 1983), 319.
[128] Diechmann Study, 57.

Chapter 2

United States Marine Corps Integrated Close Air Support Development (1919-1945)

The value of close support for ground troops as provided by these Marine flyers cannot be measured in words and there is not enough that can be said for their aerial barrages that have cut a path for the infantry. From all quarters, commanders down to the men with the bayonets, I have heard nothing but high tribute.

--Lieutenant General Robert L. Eichelberger USA, 1945

Chapter Overview

This chapter presents a comprehensive view of the development of United States Marine Corps (USMC) integrated Close Air Support (CAS) from 1927-1945. The chapter unfolds parallel to chapter one, covering the inception of USMC CAS, its early maturation and development, and its fruition in fully integrated form on Luzon in the Philippines in early 1945. A large portion of the chapter considers the impact of the USMC's primary CAS integrator and facilitator during World War II, Keith B. McCutcheon.

Marine aviation was conceived alongside its sister service air arms prior to World War I. Although Marine aviators conducted light bombing and strafing over the trenches in France in late 1918 and during the US intervention in Haiti in 1919, these strikes were not coordinated with the ground element. During the Marine Corps' 1927 intervention in Nicaragua, Marine aviators began directly supporting their ground brethren with air strikes that had a modicum of coordination. Thus, Marine Corps' CAS history warrants chronological placement in chapter two, not based upon the later date of its full integration, but rather, because beginning in 1927, Marines focused on and developed the art and science of the tactic.

Like the common misperceptions about German use of integrated CAS in early World War II, fully integrated air strikes were not part of the early American Pacific campaigns. Certainly many US Marine Corps officers presume that their service conducted positive control air strikes with radio coordination in the Pacific's early battles

at Guadalcanal, Bougainville, and Tarawa. Indeed one of the central themes in the 1951 motion picture *The Flying Leathernecks*, starring John Wayne, revolves around Marine Corps pilots developing integrated CAS in the Pacific, beginning at Guadalcanal.[1]

Uncovering the historical facts of the development of Marine Corps air-ground coordination through early 1945 is as important as German and US Army Air Forces experiences. This resonates as a point of focus for the thesis, especially in the fact that there had been no coordination between these armed forces as they developed integrated CAS. Yet the Germans, the US Marine Corps, and the US Army Air Forces all began conducting integrated CAS at approximately the same time. The fact that three disparate armed forces began conducting integrated CAS at approximately the same time indicates that its time had come.

Delving into Marine Corps history in this regard, a key leader and pioneer of Marine Corps CAS integration during World War II stands out. Lieutenant Colonel Keith B. McCutcheon, USMC served as the Operations Officer of Marine Air Group (MAG) 24, and coordinated both training and operations in support of the US Army's re-conquest of Luzon, Philippines in early 1945.[2] He proved a dynamic and forward-thinking combat leader of integrated CAS, and set the standard in the Pacific Theater. He is in the same league as both Wolfram von Richthofen and Elwood "Pete" Quesada in his contribution to integrated CAS development.

The chapter utilizes five battles and the application of CAS as a lens into Marine Corps CAS development during World War II in the Pacific. At Guadalcanal the US took the offensive against imperial Japan. CAS strikes were conducted, but in this first major battle of the US Pacific war, the tactic did not play a vital role. New Georgia was a battle that saw the first ad hoc Air Liaison Parties (ALPs). Bougainville saw the first dedicated, trained ALPs calling in air strikes. Tarawa demonstrated the challenges facing the inexperienced Navy-Marine Corps team, and demonstrated the shortfalls of CAS without utilizing ALPs. Finally, the Marine Corps' support for the Sixth and Eighth US

[1] RKO Radio Pictures, *The Flying Leathernecks*, 1951: source Internet Movie Database, http://www.imdb.com/title/tt0043547/

[2] LtCol Keith B. McCutcheon "Close Support Aviation" dated 7 August 1945. From the McCutcheon personal papers collection, Special Collections Section, Alfred M. Gray Research Center, MCB Quantico.

Armies in their re-conquest of the Philippine Islands in 1945 will be presented as the pinnacle of World War II air-ground teamwork.

Marine Corps Integrated CAS Antecedents

The only excuse for aviation in any service is its usefulness in assisting the troops on the ground to successfully carry out their operations.

--Major A.A. Cunningham, Marine Aviator #1, 1920

Marine Corps aviation dates to 1912, when First Lieutenant Alfred A. Cunningham became an aviator after merely two hours and forty minutes of flight instruction.[3] Marine aviator number one was not confused as to the *raison d'être* of the Corps' fledgling air arm. Despite being denied the opportunity to assist their ground brethren during World War I, Marine air "eagerly sought to support the Marine brigade . . . [and] proved their ability to hold their own against German veterans."[4]

Marine air's ethos has remained unchanged to the present, as stated by the head of the Aviation Section at Headquarters, Marine Corps (HQMC) in the mid 1920s, Major Edwin H. "Chief" Brainard. In 1926, Major Brainard lectured young officers at the Marine Base in Quantico, Virginia and stated, "Marine Aviation is not being developed as a separate branch of the service that considers itself too good to do anything else. Unlike the Army Air Service, we do not aspire or want to be separated from the line or to be considered anything but regular Marines."[5]

Due to the inherent hardships of naval and amphibious combat and to the Marines' historic role as the junior member of the Navy-Marine Corps team, the Corps has always had a unique role in the US defense establishment. Growth in the post-Civil War era survived the "doldrums" of the 1880s and rode the "expansion of American naval power into the western Pacific and the Caribbean and the annexation of the Philippines, Guam, Hawaii, and Puerto Rico."[6]

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[3] LtCol Edward C. Johnson USMC, *Marine Corps Aviation: The Early Years 1912-1940,* ed. by Graham A. Cosmas, (Washington, DC: History and Museums Division HQMC, 1977), 3-4.
[4] Johnson, *Marine Corps Aviation*, 82.
[5] Maj Edwin H. Brainard USMC, "Marine Aviation A Lecture," *Marine Corps Gazette*, vol. XI, no. 3, September 1926.
[6] Millett, *Semper Fidelis*, 114 and 134.

The doctrinal reason the Marines took to the air was to harness aviation's potential in support of the new *Advanced Base Force* concept.[7] The Navy Department's General Board reorganized and directed the Marines to partake in this new role, with the first major exercises held in 1912.[8] Thus, the same year the Marines first painted an eagle, globe and anchor on an airplane, came the introduction of a unique opportunity for the symbiosis of their composite concept. Apart from the larger foundational ethos of the Corps, the composite air-ground team concept became, and in many ways, remains its defining role.

Marine Corps Dive Bombing - Haiti 1919

Marine Corps dive bombing began during their intervention in Haiti in 1919. Lieutenant L.H.M. Sanderson, who became an influential aviator in the Corps' early years, incorporated and refined the tactic. The need to drop weapons accurately in close proximity to friendly troops drove a switch from the World War I era horizontal bombing, where an observer would eyeball targets or utilize "crude bombsights"[9] Sanderson stated, "the dive bombing idea was pretty much forced upon us. We were required to bomb the hostile forces in the immediate vicinity of our Marines. Fifty to 100 yards in front of friendly troops. We could not do this with safety to our troops when employing horizontal bombing."[10]

Major Rowell learned dive-bombing from the Army Air Service when he was a student at their "advanced course of instruction" at Kelly Field, Texas in 1923. Rowell stated, "at that time Billy Mitchell had announced his 'brainstorm' which was called attack aviation, a branch which had not been recognized in any other air force. He had ideas about precision and surprise attacks against sensitive points but he did not know exactly what tactical measures to adopt."[11] This is ironic when viewing the overall interwar history, as this was the period that the Army Air Service "veered more and more

[7] Peter B. Mersky, *U.S. Marine Corps Aviation 1912 to the Present*, (Baltimore, MD: The Nautical and Aviation Publishing Company of America Inc., 1991), 2.
[8] Alan R. Millett and Peter Maslowski. *For the Common Defense, A Military History of the United States,* (New York, NY: The Free Press, 1994), 323-324.
[9] Corum and Johnson, *Airpower in Small Wars*, 28.
[10] Corum and Johnson, *Airpower in Small Wars*, 28.
[11] Rowell, 1946 interview, 1.

toward the British and French concept of ground strafing" and away from dive bombing.[12]

The Marines deserve credit for incorporating, perfecting, and retaining dive-bombing in their dossier, but not for conceiving it. Writing only a few years after World War II, historian Robert Sherrod shines light on the issue. "The publicity man's legend has the Marine Corps 'inventing' dive bombing, with either Rowell or Sanderson or Chief Marine Gunner Elmo Reagan as the pioneer. Most senior Marine aviators doubt that any individual can claim credit for trying to hit his target by aiming his plane at it. But the Marines were first to adopt it as standing operating procedure and they worked hardest at it."[13] Overall, Marine pilots were the only practitioners of dive-bombing in combat between World War I and the Spanish Civil War, where the Germans debuted their Ju 87 *Stuka*. Thus, a full decade prior to the Luftwaffe, Marines were routinely conducting attacks with the interwar era equivalent of precision guided munitions (PGM).[14]

Marine Corps CAS in Nicaragua (1927-1932)

In the early decades of the twentieth century, US Navy and Marine forces found themselves engaged in many conflicts and in diverse roles throughout the Caribbean. Marine Corps historian J. Robert Moskin states the Marines were "the cutting edge of American imperialism" from the Spanish-American War into the 1930s.[15] This era is remembered in the national consciousness by President Theodore Roosevelt's famous aphorism "walk softly, and carry a big stick."[16] US Marines were the primary

[12] Peter C. Smith, *Close Air Support - An Illustrated History, 1914 to the Present,* (New York: Orion Books, 1990), 20. Smith's *Close Air Support* is one of the three seminal books on CAS evolution, with a focus on dive-bombing pervading the entire work. The other two are *Case Studies on Close Air Support* ed. by B. Franklin Cooling and *Strike from the Sky* by Richard P. Hallion.

[13] Robert Sherrod, *History of Marine Corps Aviation in World War II*, (Washington, DC: Combat Forces Press, 1952), 25. Sherrod wrote two other books on the Marine Corps, *Tarawa: The Story of a Battle* and *On to Westward: War in the Central Pacific*.

[14] Sherrod, *History of Marine Corps Aviation in World War II*, 23-27.

[15] J. Robert Moskin, *The U.S. Marine Corps Story*, (Boston, MA: Little, Brown and Co., 3rd ed., 1992), 149.

[16] Nathan Miller, *Theodore Roosevelt, A Life*, (New York, NY: Quill, 1992), 385. Roosevelt's actual statement was not in reference to foreign affairs, but to political machinations.

expeditionary force utilized during this era and the Corps' flyers were the only ones in the US military to engage in combat during the interwar years.[17]

When civil war broke out in Nicaragua in 1927, it became a focal point for US interests. The small Central American country "had strategic importance for the United States because it contained within its borders an important alternate inter-oceanic canal route." Both sides in the country's civil war agreed to the initial US intervention. Old salts were not surprised that "stability collapsed again when Augusto C. Sandino, a general of the Liberal faction . . . declared war on both the Marines and the Nicaraguan government."[18]

The Marines faced the guerrilla forces loyal to Sandino. The enemy was adept at using the dense jungles, hilly terrain, and local knowledge to their advantage. Marine aviation proved vital during this campaign, flying in various roles. One of the innovative breakthroughs was in the first US use of coordinated CAS.[19]

On 16 July 1927, a force of approximately 700 to 800 rebels assaulted the Marine outpost at Ocotal. The Marines had fewer than forty infantrymen, alongside 47 or 48 Nicaraguan guards commanded by a Marine Non-Commissioned Officer (NCO). Located in the remote rough terrain near the northern border with Honduras, Ocotal was at least a ten-day march from Managua, the capitol. The Marines and their Nicaraguan comrades in the compound fended off the first few rebel attacks, but the situation was precarious. Fortunately for the garrison, Major Ross E. Rowell's VO-1M squadron, flying six US Army Air Service surplus DH-4Bs, had recently been ordered to Nicaragua.[20]

Interviewed in 1946, Major General Rowell recalled, "The fate of our troops seemed hopeless, since their stocks of water, supplies, and ammunition were so limited. It appeared that they faced certain destruction."[21] The routine two-plane morning reconnaissance patrol flew over Ocotal observed the assault, and looked to aid their infantry brethren. Lacking air-to-ground radio communications, Lieutenant Boyden

[17] Richard P. Hallion, *Strike from the Sky, The History of Battlefield Air Attack 1911-1945,* (Washington, DC: Smithsonian Institution Press, 1989),71.
[18] Johnson, *Marine Corps Aviation*, 55. See also, 400 for details the machinations behind the proposed Nicaraguan route for a canal.
[19] Mersky, *U.S. Marine Corps Aviation 1912 to the Present*, 21.
[20] Major Ross E. Rowell USMC, oral interview conducted by USMC Aviation History Unit, 24 October 1946, 7-10.
[21] Major General Ross E. Rowell Oral Interview, USMC Aviation History Unit, 24 October 1946, page 7.

landed and got information from a local peasant,[22] while his wingman, Gunner "Polish Warhorse" Wodarcyzk "strafed the rebels until his ammunition was gone."[23]

With an update from Lieutenant Boyden about the ground force's desperate plight, Major Rowell launched every available aircraft from their Managua aerodrome. He led his five-plane formation north to the beleaguered outpost, with a full load of 600 machine gun rounds and 17-pound fragmentation bombs. Major Rowell relays that once they arrived over Ocotal, "I made one circle of the town in order to reconnoiter the situation and determine the focal point of the attack. Fuel limitations required immediate action. . . . I lead off the attack and dived out of column . . . since the enemy had not been subjected to any form of bombing attack . . . they had no fear of us. They exposed themselves in such a manner that we were able to inflict damages was out of proportion to what they might have suffered had they taken cover."[24] Airpower historians James S. Corum and Wray R. Johnson go on to quote Rowell describing the reaction of the enemy at Ocotal: "After the first bomb dropped the whole picture changed. We could see enemy groups milling around. Then they seemed to hesitate as if they were surprised to know what to do. Complete panic followed the second and third attacks. Men threw away their rifles, jumped over fences and raced wildly through the streets."[25] For his daring actions on 17 July 1927, Major Rowell earned the first Distinguished Flying Cross awarded to a Marine.[26]

Another Nicaragua veteran who went on to become a key CAS advocate was Vernon E. Megee. Flying in Nicaragua in 1930 as an aerial observer and machine gunner, (then) First Lieutenant Megee received the Navy and Marine Corps medal for actions against a large force of rebels.[27] A graduate of the Air Corps Tactical School, Colonel Megee later commanded the Air Support Control Unit during World War II, "created specifically to provide close air support for ground troops. In combat operations at Iwo Jima, Megee was said to have told his pilots to 'go scrape your bellies on the

[22] Johnson, *Marine Corps Aviation*, 56.
[23] Moskin, *The U.S. Marine Corps Story*.
[24] Rowell, 1946 interview, 8-9.
[25] James S. Corum and Wray R. Johnson, *Airpower in Small Wars, Fighting Insurgents and Terrorists*, (Lawrence, KS: University Press of Kansas, 2003), 36.
[26] Moskin, *The U.S. Marine Corps Story*, 165.
[27] Maj Gen John P. Condon USMC, supplemented by Cdr Peter B. Mersky USNR, *Corsairs to Panthers, U.S. Marine Aviation in Korea*, (Washington, DC: USMC History and Museums Division, 2002), 11-12.

beach' in support of the Marines on the ground."[28] He rose to Major General and assumed command of the First Marine Air Wing in 1953 at the tail end of what became known as the CAS controversy in Korea. In 1955, General Megee, by then an authority on CAS, wrote of Marine air's experience in Nicaragua. He described the unique challenges faced by Marine aircrew attempting air-ground coordination. "Our air-ground communications were quite simple and dependable in those halcyon days before radio, radar and IFF [Identification Friend or Foe]. We simply flew out over the area where our small columns were operating, spotted panel signals (whenever the undershirts used as panels were reasonably clean,) referred to our code cards for interpretation, zoomed down to trail our pickup fish across the message line hung on two poles, then flew off to do whatever odd chore a dirty, bearded and harassed column commander might have devised for a cocky young birdman who slept in a clean bed every night and habitually used ice in his whiskey."[29]

This description resonates with German travails of air-ground coordination in the Spanish Civil War, prior to reliable radio communications. Some of Megee's odd chores included aerial escorting infantry columns. This was wholly new at the time and proved a great aid to the grunts slogging through the jungle and mountainous terrain. The tactic is still a key technique used in modern combat to increase the ground combat element's situational awareness and to harness air-ground synergy that in the best case precludes enemy actions.[30]

In the early 1930s, although considerably smaller than the Army Air Corps (re-designated in 1926) and the Navy's air arm, Marine aviation had an "uncluttered intellectual and doctrinal focus [that] permitted innovation to thrive."[31] The Marines developed a unique focus on ground attack among the services and took pride in the

[28] Condon, supplemented by Mersky, *Corsairs to Panthers,* 12.
[29] Maj Gen V.E. MeGee USMC, "Tactical Air Support of Ground Forces," *Marine Corps Gazette*, Dec., 1955, 13. See also Bruce Lambert, "Gen. Vernon E. Megee, 91, Dies; Was Pioneer in Combat Aviation," *New York Times* Obituary Section, 19 January 1992. Lambert stated Megee "helped develop the Marine tactic of supporting ground troops with air strikes against nearby position, using rockets, napalm and strafing, with pilots directed by radio messages from land controllers."
http://query.nytimes.com/gst/fullpage.html?res=9E0CE6DB123FF93AA25752C0A964958260
[30] Author's experience. See also "3d Battalion, 1st Marines Aviation Lessons Learned from Security and Stability (SASO) / Counter Insurgency Operations - Operation Iraqi Freedom IIB (June 2004 – Jan 2005)"
[31]Richard R. Muller, "Close Air Support" *Military Innovation in the Interwar Period*, ed. by Williamson Murray and Alan R. Millet, (New York, NY: Cambridge University Press, 1996), 175-176.

"mutual confidence between air and ground which is indispensible to effective tactical aviation."[32] In twenty short but dynamic years since their founding, Marine air established and confirmed their integrated and ground attack ethos. The experience of combat helped channel their focus as fiscal realities hit the War and Navy Departments. Resonating with their rich history of embracing change, the Marine Corps of the early 1930s would undergo much restructuring and doctrinal review. Despite the depression era turbulence and budget reductions, "the Marine air-ground team had become a reality."[33]

Doctrine in the Interwar Period: the *Fleet Marine Force,* the *Tentative Manual for Landing Operations,* and the *Small Wars Manual* (1930-1940)

> *1933 marked the most crucial turning point in Marine Corps history. With the final evacuation of the last Marine detachment from Nicaragua in January, 1932 the way was at last open for a continuous program of training and indoctrination in advance base or expeditionary work with the fleet.*

In the early 1930s, Marine officers formed two distinct camps regarding the Corps' future role. Reacting to Depression-era pressures, one camp advocated becoming a small version of what in modern parlance is still termed a "second land army." The other camp focused on amphibious operations to carve a niche in national defense, leveraging the Marines traditional partnership with the Navy. "On 8 December 1933, the formation of the *Fleet Marine Force* (FMF) signaled the triumph of the amphibious warfare advocates."[34] This change took the course of a fully generation, as "the marines and the navy went slow."[35] General "Howlin' Mad" Smith USMC, in reflecting back upon the Naval War College in the early 1920s, provides an example of the intellectual inertia. "Under the old Navy doctrine, a landing was a simple and haphazard affair, involving no planning and very little preparation. Assault forces were stowed in boats 5,000 yards off the beach and give a pat on the back . . .Warships threw a few shells into

[32] Sherrod, *History of Marine Corps Aviation in World War II*, 29.
[33] Johnson, *Marine Corps Aviation,* 82.
[34] Johnson, *Marine Corps Aviation,* 61.
[35] Stephen Peter Rosen, *Winning the Next War, Innovation and the Modern Military*, (Ithaca, NY: Cornell University Press, 1991), 66.

the beach and that was all. Nobody took these landings seriously because the mere appearance of a large naval force off shore was supposed to inactivate the enemy."[36]

This new role and focus on amphibious warfare flew in the face of much common knowledge at the time. The British and Australia - New Zealand (ANZAC) corps' harrowing 1915 experience on the Gallipoli peninsula during World War I cast an immense shadow. The tragedy of the *S.S. River Clyde* incident, where assaulting British infantry suffered horrid casualties during debarkation from the beached collier, became a cautionary tale for most of the world's military forces. Gallipoli historian Alan Moorehead relates that immediately after the ill-fated ship's grounding, "Turkish rifle fire burst out. It was a frightful fire, and it was made more shocking by the silence that had preceded it. Far from being demoralized, the Turks had crept back to their trenches as soon as the bombardment was over, and they were now firing from a few yards away into the packed mass of screaming, struggling men in the boats."[37]

Study of the Gallipoli campaign constituted an important lessons learned course at the Marine Corps Schools in Quantico VA, as early as 1932.[38] Instructors intended to "acquaint the students with the Gallipoli Campaign; to train them in military research; and to provide the Schools and through them the Marine Corps with the material of value on a campaign which is in many respects of the type we are expected to be experts in."[39] Most militaries turned away from amphibious development in the interwar period and drew the conclusion that the defender had a disproportionate advantage. However, in Quantico "at least one Marine Corps analyst thought as early as 1921 that the flaws in the Gallipoli operations were correctable by proper planning and appropriate doctrine on the use of naval gunfire and the deployment of the landing force."[40]

Another pressure emanated on the other side of the world, as the defense establishment became more conscious of the threat Japan posed to long term US interests in the Pacific. The brilliant, far-sighted, but enigmatic Major Earl H. "Pete" Ellis,

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[36] Rosen, *Winning the Next War*, 81.
[37] Alan Morehead, *Gallipoli*, (London, UK: Hamish Hamilton Ltd., 1956), 140-144. See also Millett, *Semper Fidelis*, 321.
[38] LtCol Kenneth J. Clifford, USMC, *Progress and Purpose: A Developmental History of the United States Marine Corps 1900-1970*, (Washington, DC: History and Museums Division, HQMC, 1973), 45.
[39] Clifford, *Progress and Purpose*, 45.
[40] Millett, *Semper Fidelis*, 321.

USMC, was a prophet of World War II's Pacific Campaign.[41] Dying under mysterious circumstances in the South Pacific in 1923, "it is with historical certitude to say that Ellis had seen, while in the Caroline Islands, what the world would ultimately know by WW II, that the Japanese illegally fortified the mandated islands contrary to the League of Nations instructions."[42] Influenced by the Navy's War Plan Orange as early as 1921, Ellis conceived of the need to seize advanced naval bases in the Pacific, with a view toward Japan as the future enemy. Ellis "outlined with prophetic insight the fundamental problems of assaults on the Marshalls and Carolines and established the rudiments of amphibious assault doctrine. . . [he] argued that the success of an opposed landing depended on a rapid ship-to-shore movement of waves of assault craft covered by overwhelming naval gunfire and aerial attacks."[43]

Immediately after the reorganization into the *Fleet Marine Force,* officers at Marine Corps Schools in Quantico, Virginia laid out amphibious doctrine for the Corps' new role. Select officers wrote the *Tentative Manual for Landing Operations* in 1934 and focused on a new larger-scale amphibious role for the Corps.[44] Marine Commandant General John Russell was the driving force in this area; he was the primary agent for both the *FMF* and *the Tentative Manual*. Additionally, Russell took key steps to ensure older officers were retired "to make room for younger officers who were favorable to the new way of war."[45]

The Marines executed relatively small-scale amphibious landings as early as 1776, landing on the British held island of New Providence in the Caribbean during the Revolution.[46] As recently as 2006, elements of the 24 Marine Expeditionary Unit (MEU) and Expeditionary Strike Group Three, utilized their amphibious capability in conjunction with the Navy to extract US citizens from war-torn Beirut, Lebanon. Traditionally, Marines comprised landing parties designed to come off US Navy ships for

[41] Rosen, *Winning the Next War,* 67.
[42] Clifford, *Progress and Purpose: A Developmental History of the United States Marine Corps 1900-1970,* 64.
[43] Millett, *Semper Fidelis*, 64.
[44] Marine Corps Schools, *Tentative Manual for Landing Operations,* (Marine Barracks Quantico, VA, 1934) [Special Collections Branch, Gray Research Center, MCB Quantico, VA] Author was given access to the Marine Corps' only copy. See also Isely and Crowl, *U.S. Marines and Amphibious War,* 44.
[45] Rosen, *Winning the Next War*, 82-85. Much of Rosen's chapter 2 concerns the USMC's amphibious development 1905-1940. In reviewing this entire history, it is useful to peer through Rosen's lenses of peacetime, wartime, and technological innovation.
[46] Millett, *Semper Fidelis*, 10.

operations ashore; their unique amphibious capability and ethos remains an important part of the fabric of the Corps.

With its publication two years before the German experience with CAS in the Spanish Civil War, the *Tentative Manual for Landing Operations* clearly articulated the expectations for air support during amphibious landings:

> *"Continuous air support* must be provided throughout the landing phase and continued until the attacking force is well established on shore. . . The closest of cooperation must exist between air units and their operations must be meticulously coordinated with those of the supported troops. Much liaison and careful planning is required to insure proper air support under the difficulties to be encountered in these operations. [nine paragraphs later it continues] . . . *When the ships' gunfire lifts*, attack aviation and dive bombers take over the neutralization of strong points in the beach defenses by attacking machine guns [et cetera] . . . This is another critical stage in the process of getting ashore and must receive the whole-hearted support and determined efforts of the supporting air force."[47]

The *Fleet Marine Force* construct and the *Tentative Manual for Landing Operations* codified the Marines' amphibious role. The challenges associated with these new roles in a major war vastly overshadowed what the Marines had heretofore dealt with.[48] Historian Alan R. Millet delivers high praise stating the "Marine Corps made its most important contribution to American military history during those frustrating, threadbare days when far-sighted Commandants, Quantico planners, and small FMF units pieced together the essential concepts for a successful amphibious assault."[49]

The 1934 amphibious exercises, called Fleet Landing Exercises (FLEX) included training for large-scale landings.[50] Toward the end of the 1930s, this amphibious training took on "a new urgency" and sense of purpose, driven by the clouds of war in Europe and the nation's negative perceptions of Japan. This milieu "pressed the Fleet Marine Force to new heights of performance. To avoid presumed Japanese spying, the FMF returned to

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[47] Marine Corps Schools, *Tentative Manual for Landing Operations,* (Marine Barracks Quantico, VA, 1934), paragraph 2-406 and 2-415, pages 3 and 5. Italics per the original. [Special Collections Branch, Gray Research Center, MCB Quantico, VA]
[48] Muller, "Close Air Support" *Military Innovation in the Interwar Period*, ed. by Murray and Millet, 177.
[49] Millett, *Semper Fidelis*, 343.
[50] Millet, *Semper Fidelis*, 337.

the Caribbean."[51] As late as 1941-1942, various US Army and Navy units, including both the 1st and 3rd Infantry Divisions, trained "under Marine Corps auspices . . . [with] *Fleet Marine Force* amphibious doctrine and training spread out into every area of the war and permeated all the services."[52]

Regarding aviation's role in the new strengthened amphibious doctrine, "again the recommendation was made [after the 1937 FLEX] . . . that the Marine Corps needed modern attack planes and attack aviation should become an integral component of Marine Corps aviation if it was to carry out one of its primary missions of destruction and neutralization of beach defenses."[53] The Commandant of the Marine Corps, Lieutenant General Thomas Holcomb, noted at the end of the 1930s "air-ground training between aviation and ground troops has been conducted whenever possible."[54] Although true, the problem with the air-ground training in this era was that there was a lack of close coordination between the two components.

In August 1945, Lieutenant Colonel Keith B. McCutcheon, one of the Marine Corps' primary CAS innovators in the Pacific, recalled this challenge. He described the lack of air-ground training in the naval aviation training syllabus aspiring Marine pilots underwent to earn their wings. "At no stage of the training [naval aviation training prior to 1944] was there any time devoted to closely coordinated attacks in support of ground forces."[55] However, Marine aviation's reality during the lean years of the great depression "like all the arms of all the services, operated on a starvation budget. The arrival of even half a dozen new planes . . . was something to marvel at. The Marine aviators were the last to get new planes (a condition that obtained until the closing months of World War II)."[56]

Marine Corps officers wrote the *Small Wars Manual* in 1940, which persists as a doctrinal touchstone. The manual captured many of the disparate tactical lessons from the Marine's operational experience in the Caribbean dating back to the turn of the

[51] Millet, *Semper Fidelis*, 339.
[52] Isely and Crowl, *The U.S. Marines and Amphibious War*, 67-70
[53] Isely and Crowl, *The U..S. Marines and Amphibious War*, 53-54.
[54] LtCol Kenneth J. Clifford USMC, *Progress and Purpose: A Developmental History of the United States Marine Corps 1900-1970*, (Washington, DC: History and Museums Division, HQMC, 1973), 59.
[55] LtCol Keith B. McCutcheon, "Close Support Aviation" report prepared by Group Operations Officer, Marine Air Group 24, 1st Marine Air Wing, August 1945. The General Keith B. McCutcheon personal collection 464, Box 2, Special Collections Branch, Gray Research Center, MCB Quantico, VA.
[56] Sherrod, *History of Marine Corps Aviation in World War II*, 30.

century. The manual's clarity, wisdom, and longevity are the reasons for its continued reference in the conduct of counter-insurgency operations.[57] The *Small Wars Manual* clearly stated combat aviation's proper role and relayed the synergy of air-ground teamwork. "The primary mission of combat aviation in a small war is the direct support of the ground forces. This implies generally that all combat aviation will be used for ground attack . . . Combat aviation may be used as a substitute for artillery in the organized attacks of hostile strong-holds. As such, it provides for the preliminary reduction of the hostile defenses by bombing, for the interdiction of lines of communication and supply, and for the direct close-in support of the attacking infantry by laying down a barrage of machine gun bullets and fragmentation bombs on the enemy front lines."[58]

Marine Aviation and the State of CAS on the Eve of World War II

In the second half of the 1930s, all three American military services began to receive new aircraft with vastly improved performance. Aviation technology had matured to incorporate monoplane construction, fully retractable landing gear, and greater aerodynamic streamlining. Older aircraft consisted of open-cockpit biplanes with fixed landing gear some of which the Marine Corps flew as late as 1939.[59]

The arrival of all-metal monoplanes with their higher speed and altitude brought new challenges to Marine CAS. "Pilots in the open cockpits of slow-moving DH-4Bs and comparable machines usually could locate friendly and enemy positions relatively easily by sight and sound, but aviators of the 30s, often riding in closed cockpits, swept across lines too quickly to orient themselves."[60] Junior pilots frequently found, in aircraft introduced in the late 1930s such as the Brewster F2A *Buffalo* fighter and the Vought SB2U *Vindicator* dive-bomber, that "the already difficult problems of communicating with friendly infantry and spotting ground targets nearly impossible."[61]

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[57] FM 3-24 / MCDP 3-33.5 *Counterinsurgency*
[58] United States Marine Corps, *Small Wars Manual*, (Washington, DC: United States Government Printing Office, 1940), chapter IX, Section VI, para. 9-29, pg. 20.
[59] Johnson, *Marine Corps Aviation* , 76. Johnson states, "Finally in 1939, the Marines received their first all-metal monoplane fighter, the Brewster Aeronautical Corporation's F2A "Buffalo."
[60] Johnson, *Marine Corps Aviation* ,79. See also Millett, *Semper Fidelis*, 334-335.
[61] Millett, *Semper Fidelis*, 334-335.

Air-to-ground communications remained the primary challenge that hindered fully integrated CAS throughout the entire interwar period and until the late stages of World War II. Communication problems hindering CAS during World War I and II was a common theme to all armed forces who attempted to incorporate the tactic. The Marines recognized these problems in Nicaragua, and captured the challenges in the *Tentative Manual for Landing Operations*. Looking back in 1955, Marine aviation leader and CAS advocate, Major General V.E. Megee stated, "While we did evolve the doctrines and tactics of close air support prior to WW II, we went into that conflict without an adequate system of air-ground communications. We were still panel and pickup minded."[62] The technological development of aircraft radios did not advance in parallel with the rest of aviation's breakthroughs during this period and into the first years of World War II.[63]

The final challenge to CAS on the eve of World War II was personnel related. Throughout Marine aviation's early years, and continuing into the late 1930s, many of the Corps' pilots were converts to the air wing who had served previous tours as ground officers. As World War II approached, and the Corps rushed to expand, the junior pilots who arrived in squadrons were mostly fresh out of college, with no prior Marine Corps experience. The demands placed upon the Marines at the outset of the war forced the suspension of both the Basic School (TBS) training and the two-year requirement for all aviators to serve with the ground forces prior to flight training.[64] Thus, they did not have the infantrymen's frame of reference, nor could they adapt as quickly as their seasoned predecessors could.[65] The younger pilots lack of ground experience, combined with the aforementioned faster aircraft and communications problems of the era, led aviation historian Richard Muller to argue that Marine CAS was in "retreat" on the eve of World War II.[66]

The Marine Corps alleviated the personnel issue in the late stages of World War II, ordering pilots to the Aviation Ground Officers School. Pilots first matriculated there

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[62] Maj Gen V.E. Megee USMC, "Tactical Air Support of Ground Forces," *Marine Corps Gazette*, December, 1955, page 13.
[63] Millett, *Semper Fidelis*, 335.
[64] Maj Gen V.E. Megee, USMC, "The Evolution of Marine Aviation" *Marine Corps Gazette*, August 1965, 26.
[65] Johnson, *Marine Corps Aviation* ,79.
[66] Muller, "Close Air Support" *Military Innovation in the Interwar Period*, ed. by Murray and Millet, 177.

in October 1944. "Making like 'Mud Marines' was not a well-loved chore for the birdmen at first, but they found it much less objectionable as they worked to overcome the failings common to precision air-infantry support in the field. Scores of Marine fliers and ground officers completed the course before the end of the war, with early graduates going directly to combat units."[67]

After World War II, the Marine Corps corrected the problem of officers with disparate backgrounds lacking a common training baseline and returned to the pre-war Basic School program. The Marine Corps' Basic School mission evolved to inculcate all newly minted Second Lieutenants and Warrant Officers (male and female) in the tactics and techniques required of an infantry platoon leader, prior to their specialization in separate MOSs. This type of officer training was suspended during the run up to and in the early stages of World War II, when the Corps conducted rapid growth to heretofore undreamt of numbers. From a manpower end-strength of 19,380 men in 1930, the Marine Corps ballooned to 28,345 in 1940, up to a gargantuan 475,000 in 1945 (the Corps' highest personnel end-strength in its history).[68] Marines gained many institutional benefits from the practice of conducting all initial officers' training via the same touchstone. Not the least of these benefits is that those who go on to earn naval aviator wings directly empathize with and have trained as a ground combat element leader.

Another key step taken toward linking CAS between the air and ground occurred in 1939. Just prior to World War II, the Marine Corps established the billet of air liaison officer, and filled the role on the 1st Marine Brigade staff. The officers filling the position provided key advice to ground combat element leaders on the capabilities and limitations of Marine Aviation. They are the antecedents of the modern air officers at Battalion level and above. Although not in a forward position to speak directly to aircraft, the Marine Corps air liaison officers' role became permanent in 1939. The Corps took yet another tangible step toward air-ground integration.[69] Finally, the 1939 examples of German Blitzkrieg CAS, even if as we now know they were not fully integrated, made an impression on the Marines a world away, two years prior to Pearl

[67] Captain John A. De Chant USMCR, *Devilbirds: The Story of Marine Corps Aviation in World War II*, (New York, NY: Harper and Brothers Publishers, 1947), 56-57.
[68] Alan R. Millet and Peter Maslowski, *For the Common Defense, A Military History of the United States, (*New York, NY: The Free Press, 1994), 655-656.
[69] Clifford, *Progress and Purpose*, 59.

Harbor. Writing in mid 1945 after the successful conclusion of combat in the Philippines, Marine Corps CAS pioneer Lieutenant Colonel Keith B. McCutcheon stated, "it was the German use of the 'Stuka' in the early part of the war that really gave impetus to close support aviation. The plane-tank-infantry team was established. However we were slow to learn. It has now been five years since the Germans entered Poland and we are still without a coordinate doctrine on close air support."[70] As we shall see, Lieutenant Colonel McCutcheon took it upon himself to rectify the situation.

In all, Marine Corps aviation had evolved significantly in thirty years. Soon Marine aircrew men found themselves fighting "in the air, on land, and sea" in a titanic struggle with the Empire of Japan. "The approximately three decades of Marine aviation before December 1941 had seen a fledgling force of a few men and machines grow to two full wings of aircraft and personnel whose skill would be tested to the utmost in the dynamic years of World War II. There had been policy and administrative changes during those thirty years, some not always successful, or popular; but the Marines fortunately found themselves with a nucleus of seasoned, experienced, dedicated airmen to fight the conflict suddenly thrust upon them."[71]

Marine Corps CAS in the Early Years of the War in the Pacific (1941-1943)

On 7 December 1941, Japan's naval air arm attacked the US at Pearl Harbor and six military airfields on Hawaii. The Japanese pilots, who had obviously trained for the Pearl Harbor attack for months, left much of the Pacific fleet and US military on Hawaii destroyed or heavily damaged. Ultimately, the Japanese attack killed 2,335 service personnel and 68 civilians, with another 1,143 service personnel and 35 civilians wounded. The two-wave attack sank, capsized, or heavily damaged eight battleships, three light cruisers, three destroyers, and four auxiliary craft. US aircraft destroyed totaled 77 with 128 damaged. [72] The early stages of the Pacific war were dark days for

[70] LtCol Keith B. McCutcheon, USMC, "Close Support Aviation" report reproduced by Intelligence Section, Department of Aviation, HQMC, August 1945, pg 2. The General Keith B. McCutcheon personal collection 464, Box 2, Special Collections Branch, Gray Research Center, MCB Quantico, Va.
[71] Mersky, *U.S. Marine Corps Aviation*, 28.
[72] Gordon W. Prange, *At Dawn We Slept: The Untold Story of Pearl Harbor*, (New York, NY: Penguin Books, 1981), 517-527 and 539.

the US. "For the Marine Corps, the first six months of the World War II were heart-rending, as scattered detachments fell before the Japanese offensive."[73]

The long road to victory and unconditional surrender in the Pacific was pursued via two main axes: the Central and Southwest Pacific campaigns. The preponderance of the Marine Corps' focus was on the Central Pacific drive under Admiral Nimitz, but Marine aviation played key roles in supporting General MacArthur's 1945 drive to liberate the Philippine Islands as well. This is where the Marine Corps use of fully integrated CAS first came to fruition.

Twin common misconceptions of Marine aviation in World War II were that Marine infantry had CAS delivered by Marine aircraft every time they went into the assault, and that those Marine aircraft were carrier based. Both of these assumptions are false. "During most of World War II, the Marines were restricted in their support of amphibious operations, [sic] to those landings which were within fighter range of bases already won."[74] Thus, Marine ground pounders did not receive CAS from carrier-borne Marine Corps aircraft until February 1945, at Iwo Jima. Despite having focused on the tactic since 1927, the Marine Corps did not achieve fully integrated CAS until that same month, in support of the US Army in the Philippines.[75]

A challenge Marine aviation dealt with was its rapid expansion during the post-Pearl Harbor recruiting boom as the Corps expanded rapidly. "1942 was a special year, for it brought into the Corps some of the finest men it had seen since World War I."[76] The priority given to training sheer numbers of pilots compounded the challenge of teaching CAS, one of the most difficult missions a pilot flew, to the young influx of trainees. "Only the presence of a few prewar Marine aviation officers and enlisted men gave Marine aviation some veneer of Corps character and exposure to the doctrine of close air support. Given the rapid expansion of Marine Corps aviation (from thirteen squadrons on December 7, 1941, to eighty-seven in 1943) and the integration of Marine aviation units into the Navy's land-based air organization, the wonder is not that Marine pilots learned the air superiority and fleet-destroying doctrines of the Navy but that they

[73] Millett, *Semper Fidelis*, 353.
[74] Sherrod, *History of Marine Corps Aviation in World War II*, 32.
[75] Captain John A. De Chant USMCR, *Devilbirds: The Story of Marine Corps Aviation in World War II*, (New York, NY: Harper and Brothers Publishers, 1947).
[76] Millett, *Semper Fidelis*, 360.

retained any Marine Corps character at all. Yet the indoctrination doggedly provided by senior officers gave Marine aviation a special flavor and an interest in the close support of ground troops."[77]

CAS at Guadalcanal (August 1942 - February 1943)

Predictably, the same issues that arose in the prewar period with regard to CAS became evident during in the Marine Corps' first offensive operation of the Pacific War. New challenges became evident as well, once the US was in a shooting war, such as joint teamwork and command and control.

Unity of command issues with the Navy severely challenged the Commanding General of the 1st Marine Division, the influential (and future Commandant) Major General A. A. Vandegrift, USMC. Since the outset of the campaign, he and Admiral Turner, USN "waged a war of words over control of the landing force of the South Pacific amphibious force."[78] This issue detracted considerably from unity of command and operational focus. Finally settled in the Corps's favor, a doctrinal shift ensured that the "landing force commander would be subordinate to the amphibious task force commander only during the actual movement to the objective area and the initial landings."[79] This proved a key clarification for the Marine Corps in the Pacific that saw repeated large-scale amphibious assaults against a tenacious and disciplined enemy.

Prior to the Marine lodgment ashore at Guadalcanal and operations from what became Henderson Field, US Navy carrier aircraft provided CAS. "Since . . . opportunities to train the navy carrier pilots in ground operations were limited, the air support plan emphasized simplicity at the expense of exactitude. Scheduled strikes were delivered on time, but . . . failed to knock out well-constructed targets. As for call strikes, the communications system was so complex as to preclude flexibility. . . When delays were involved, the advancing Marines were sometimes endangered."[80]

Some of the communications complexity involved the request being transmitted from the infantry in contact with the enemy, up their chain of command, then to

[77] Millett, *Semper Fidelis*, 361.
[78] Millett, *Semper Fidelis*, 371.
[79] Millett, *Semper Fidelis*, 371.
[80] Isely and Crowl, *U.S. Marines and Amphibious War*, 125-126.

headquarters at Henderson Field, and finally to the aircraft. Some of the inertia causing delayed airstrikes was the Navy's firm retention of "complete control over supporting aircraft."[81]

This convoluted CAS communication situation so vexed General Vandegrift, that during the battle he "again brought to the attention of the Navy Department in Washington, namely the need for direct communication between the planes and the tactical commanders ashore." Historians Isely and Crowl quote a pilot who stated it was "essential that ground forces in an operation of this type have radio communication directly with the liaison planes or Air Group Commander in order that maximum support may be afforded ground personnel."[82] This is reminiscent of German CAS growing pains in communications and organizational challenges.

A Marine Corps Historical Division retrospective bluntly states the stark differences in the prioritization of Navy and Marine air: "The importance of the Navy carrier force to the Fleet when weighed against their possible loss in the support of the Marines, who had landed, brought a decision to withdraw the carriers and remove the air support."[83] On 9 August 1942, Admiral Fletcher and his aircraft carriers conducted a "hurried departure" and the naval battles that raged around the island did not turn in the US favor until October.[84] "The subsequent rather inglorious withdrawal of the supporting carriers and the half-unloaded transports left the Marines stranded without air support and critically short of supplies."[85]

The Marine infantry on the island thus had a welcome sight on 20 August 1942, when 31 F4F *Wildcat* fighters and 12 SBD *Dauntless* dive-bombers of Marine Air Group (MAG) 23 conducted a one-way flight off *USS Long Island* and landed at the newly constructed Henderson Field. "A shout of relief and welcome went up from every Marine on the island."[86] These Marine aviators came to form the core of the "Cactus Air Force," *Cactus* being the radio codeword for Guadalcanal. This hodgepodge unit

[81] Isely and Crowl, *U.S. Marines and Amphibious War*, 125-126.
[82] Isely and Crowl, *U.S. Marines and Amphibious War*, 125-126.
[83] Head, Marine Corps Historical Branch, "Historical Data on Roles of Marine Corps Air Support (Fixed Wing) in Selected Amphibious Operations" December 17, 1968. Encl. 1, pg 3. Close Air Support Papers, Marine Corps Historical Division, MCB Quantico, Va.
[84] Millett, *Semper Fidelis*, 367.
[85] MeGee, General V.E. USMC "The Evolution of Marine Aviation" *Marine Corps Gazette*, September, 1965, 57.
[86] Sherrod, *History of Marine Corps Aviation in World War*, 79.

eventually consisted of Marine, Army Air Forces, Navy, and Allied squadrons, but across the board, communication challenges plagued CAS attempts at full support of the infantry for all the services. In the early stages of World War II, there was a predilection for pre-planned airstrikes in nearly all the world's militaries. On Guadalcanal, there were cases where "pilots were given the target before takeoff."[87]

Pre-planned airstrikes are one tool, but the complexities and dynamic environment of actual combat makes pre-planned CAS limited to specific circumstances where many, if not most variables are known beforehand. Pre-planned CAS is still a tactic employed on the modern battlefield, but most often against a confirmed target that is static, and many times part of large-scale, formally named operations. In the current campaigns in Iraq and Afghanistan, Air Officers and Air Liaison Officers submit pre-planned Joint Tactical Air Requests (JTAR) as a way to get recurring air support. On many missions, this takes the form of a request for on-call CAS, intelligence, surveillance and reconnaissance (ISR) and non-traditional ISR support.[88] Pre-planned missions do not allow for any flexibility and discourse between the ground and air in case of changing circumstances.

As frustrations with the complex communications system for processing CAS requests grew, "in many cases they [Marine pilots based at Henderson Field] walked up to the front lines and visually checked the target. This system is one of the forerunners of the Tactical Air Control Party (TACP) consisting of a Marine aviator and communications personnel."[89] Seasoned Cactus Air Force pilots walking up to the front lines in order to increase their situational awareness prior to CAS sorties was reminiscent of the German experience in the Spanish Civil War. Prior to the TACPs teams coming to full fruition during the Battle of Okinawa in April 1945, there was an interim step termed the Air Liaison Party (ALP). ALPs had their trial by fire during the subsequent battle of New Georgia, but the impetus for both the ALP and the later TACP teams was in the dark

[87] Clifford, *Progress and Purpose*, 67.
[88] Author's experience. See also Joint Publication (JP) 3-09.3 *Close Air Support*. Washington, DC: US Government Printing Office, 2009.
[89] Clifford, *Progress and Purpose*, 67.

days of jungle fighting on Guadalcanal.[90] Herein lays the cornerstone of fully integrated CAS for the Marine Corps.

Early World War II hindrances to integrated CAS included communications difficulties, the lack of specified training in ground support, the modern faster planes, and inter-service friction. They all hearkened back to the German experience with CAS development from the interwar years, through the early stages of World War II. Perhaps the focus on air-to-air kills mitigated some air-ground teamwork. "There had been too much emphasis, anyway on individual 'scores,' which were intensely interesting to the public, but not conducive to the best teamwork."[91] These circumstances outlived World War II as potential detractors from CAS's full application. This does not detract from the vital importance of achieving air supremacy or localized air superiority, but simply states that CAS in support of the ground combat element being subsumed by non-essential "kill" chasing, if and when it occurred was not optimum utilization of air assets.

Overall, the CAS rendered at Guadalcanal did not attain its potential in support of the ground forces. The authoritative *History of Marine Corps Aviation in World War II,* written by former combat correspondent Robert Sherrod only six years after the war's conclusion, is silent regarding CAS at Guadalcanal.[92] The tenacity and endurance of the individual US Marine and soldier was what swung the balance of combat in their favor. Although the Cactus Air Force undoubtedly made key contributions to victory in securing air superiority and destroying and deterring Japanese naval operations, true air-ground integration remained unattained.

Refining Marine Corps CAS Under Fire - Climbing the Solomon Islands' Chain (1943)

Capturing the lessons learned from the Guadalcanal campaign was a high priority for the Marine Corps, especially in the 1st and 2nd Marine Divisions. The 1st Marine Division, "close to exhaustion" upon their reinforcement by the 2nd Marine and two US

[90] Major W.E. Sullivan, "History and Development of Close Air Support," *Marine Corps Gazette*, November 1956, 20. TACP teams are still a facet of modern USMC doctrine.
[91] Sherrod, *History of Marine Corps Aviation in World War II*, 105. See also Mersky, *U.S. Marine Corps Aviation*, 97.
[92] Sherrod, *History of Marine Corps Aviation in World War II*.

Army divisions near the end of their tour of heavy sustained jungle combat, was in many ways seared by the experience.[93] Indeed, the 1st Marine Division has carried the island's name emblazoned on its crest ever since. With the aforementioned command and control issue between the senior Marine and Navy leaders doctrinally worked out, it fell to more junior officers to capture and apply the operational and tactical lessons of Guadalcanal. No teacher instructs like combat and the Marines attempted to apply the lessons of "The Canal" with vigor.[94]

The US Navy's premature withdrawal of its aircraft carriers early in the Guadalcanal campaign still resonates with Marines nearly 70 years later. In early 1943, the Marine's impetus to refine combat support procedures must have been immense. The last line of the Guadalcanal section of an official HQMC memorandum on fixed wing air support states, "it became apparent that there was a need for direct communication between the planes and the tactical commanders ashore."[95] As the war in the Pacific continued, this intent shifted down further to the lower tactical echelons.

In the months following the Guadalcanal fight, the 3rd Marine Division instituted "an intensive air support school" under the direction of the Division's Air Officer, Lieutenant Colonel John Gabbert USMC. Gabbert took initiative to daring heights when viewed with modern eyes. In what could be the defense establishment's first codification of "danger close" calculations, Gabbert "used himself as a target for live bombs to determine the exact rule-of-thumb for the effect of their explosions on friendly troops."[96]

The 3rd Marine Division's air support school proved invaluable in subsequent combat, beginning at Bougainville in November, 1943. Lieutenant Colonel Gabbert's school trained regimental and battalion officers in the intricacies of air support and in the lessons learned from "The Canal" and elsewhere. Months prior to the landings on Bougainville, the school set out its goals: to improve target identification by the air-ground team, to codify target marking smoke utilization, and to refine and standardize

[93] Millett, *Semper Fidelis*, 370.
[94] The author's friendship and discussions with Corporal Al Worrick, USMCR, a veteran of the 1st Marine Division on Guadalcanal. Cpl Warrick always referred to Guadalcanal as "The Canal."
[95] Head, Marine Corps Historical Branch, "Historical Data on Roles of Marine Corps Air Support (Fixed Wing) in Selected Amphibious Operations," December 17, 1968, encl. 2. Close Air Support Papers, Marine Corps Historical Division, MCB Quantico, VA.
[96] De Chant, *Devilbirds*, 123.

air-ground communication procedures and equipment.[97] Their success resulted in the institutionalization of the Air Liaison Party (ALP) and the fruition of one of General Vandegrift's key recommendations from Guadalcanal.[98]

New Georgia - Rudimentary CAS (June - August 1943)

The over-arching strategy and design of Operation CARTWHEEL intended to isolate the Japanese stronghold at Rabaul. General MacArthur and his Southwest Pacific Area Force comprised the western half of the plan's design, marching up New Guinea and onto New Britain, while the South Pacific Area Force, under Admiral Halsey, climbed the Solomon island chain.[99]

Although combat on New Georgia in the central Solomon island chain occurred too early to benefit from the 3rd Marine Division's new ALP school training, the word was getting out. "A system of rudimentary CAS for the ground troops [was effected.] . . . No volunteer specialists for air-ground liaison had yet arrived in the South Pacific, so eight officers (six of them Marine aviators) and eight enlisted radiomen under Major Wilfred Stiles were designated as air liaison parties." The volunteer aspect of aviators serving with infantry battalions is still alive and well in the modern Marine Corps.[100]

Although no formally trained ALPs served on New Georgia, the Corps received a different type of shot in the arm. Prior to the battle, the highly anticipated Chance Vought F4U-1 *Corsair* fighter arrived. A "superior" fighter, the *Corsair* was "in every department better than the *Zero."*[101] The Marines needed all their aircraft, as in the first half of 1943 "Navy carrier resources in the Pacific were at an all-time low. Only the *Enterprise* and *Saratoga* were operational, and it would be mid-summer before any newer flattops would join the fleet."[102] Fortunately, land based Marine air support for

[97] Clifford, *Progress and Purpose,* 67-68. See also De Chant, *Devilbirds*, 123.
[98] Isely and Crowl, *U.S. Marines and Amphibious War*, 171.
[99] Millett, *Semper Fidelis*, 377-379.
[100] The author volunteered for two tours with infantry battalions as a Forward Air Controller - Air Officer.
[101] Isely and Crowl, *U.S. Marines and Amphibious War*, 171.
[102] Mersky, *U.S. Marine Corps Aviation,* 54.

this operation was available to an unprecedented degree from six airfields, four on Guadalcanal and two on the Russell islands.[103]

The tenacious Japanese were fortunate to fight under incredibly thick jungle, making target derivation and acquisition extremely challenging. As this was the first battle where ALPs attempted to coordinate air strikes, they had to overcome skeptics and Marine veterans who had seen or heard of air-ground fratricide in the past. "The simple truth was that the friendly ground troops were afraid of the bombers."[104] CAS was problematic due to the terrain and because the untrained ALPs were an unprecedented addition to the ground forces. Historian and war correspondent Robert Sherrod quotes a Marine Air Commander, "the use of aircraft in close support of ground troops proved to be impractical . . . the dense jungle encountered made the location of enemy positions suitable for air attack impossible until friendly troops were too close to the prospective target for safety."[105] Without Lieutenant Colonel Gabbert's efforts, Marines would have been guessing at these distances. The Marines were taking a methodical approach to CAS.

Major Stiles' ALPs on New Georgia also brought with them a suite of air-ground equipment came to be standardized. "Their equipment consisted of four command cars (ancestors of the radio jeeps which became ubiquitous in later infantry battles) each equipped with an SCR-193 radio, an aldis lamp, pyrotechnic equipment, and Isenburg cloth for panels."[106] The descendents of this ALP gear on New Georgia remained with Marine ground combat units, known as the *forward air controller (FAC) suite*. The FAC suite remains a part of all Marine units that have a FAC or an air officer.

In the end, the New Georgia operation was mostly a US Army show with Marine Raiders, tanks, and heavy 155mm "Long Tom" artillery in support. [107] The Marines learned more integration lessons, not just in CAS, and were poised to proceed with a new repertoire of doctrine and equipment. "Because Marine ground and air units were leavened with Guadalcanal veterans and new equipment – from Corsairs to Sherman

[103] Isely and Crowl, *U.S. Marines and Amphibious War*, 168.
[104] George W. Garand and Truman R. Strobridge, *History of U.S. Marine Corps Operations in World War II, Volume IV, Western Pacific Operations*, (Washington, DC: Historical Branch, G-3 Division, Headquarters, U.S. Marine Corps, 1971), 305.
[105] Sherrod, *History of Marine Corps Aviation in World War II*, 151.
[106] Sherrod, *History of Marine Corps Aviation in World War II*, 150.
[107] Millett, *Semper Fidelis*, 380.

tanks to camouflaged jungle uniforms – was flowing to Marine units, the Marines in the South Pacific entered the renewed offensive with confidence."[108] In evaluating CAS on New Georgia, it can be stated that now the Marines were taking a detailed, methodical approach to CAS, and in that they did not look back. Their next test would be Bougainville, where formally trained ALPs made their debut.

Bougainville - Marine CAS with Trained ALPs (November - December 1943)

To date, Navy and Marine Corps teamwork had been problematic, but as the plan for the Bougainville operation proceeded, rays of light shone upon the US sea-borne forces' synergy. Much of this was personality related. "The scheme of maneuver selected by the attack force and landing force commanders was involved but brilliant. Cooperation between these two officers, navy and marine, [Rear Admiral Wilkinson and Lieutenant General Vandegrift] left nothing to be desired."[109] In addition to smoother working relationships was the realization that a methodical approach had to be taken to CAS. The first formal CAS training occurred during the planning phase for Bougainville, when "a school was conducted on the capabilities, use and limitations, as well as the procedure for requesting air support."[110]

As the final large island at the top of the Solomon chain, Bougainville was a key to isolating Rabaul and choking off the Japanese from the South Pacific Area. Like New Georgia, the Marines would benefit from using their own land based air arm, in conjunction with Navy and Army Air Force assets. It was time to send Lieutenant Colonel Gabbert's trained ALPs into the fight. "From the standpoint of Marine aviation, perhaps the most satisfactory aspect of the Bougainville campaign was the progress made in close air support. Bougainville, in fact, marked the beginning of such tactics in the 'modern' sense of the word."[111]

The first officially documented air strike controlled by formally trained ALPs occurred on Bougainville. Although imperfect, the engagement clearly reflects how far Marine CAS had come in the course of its rich history, and in a twist of fate it occurred

[108] Millett, *Semper Fidelis*, 379.
[109] Isely and Crowl, *U.S. Marines and Amphibious War*, 175.
[110] Sullivan, "History and Development of Close Air Support," *Marine Corps Gazette*, November 1956, 21.
[111] Sherrod, *History of Marine Corps Aviation in World War II*, 189.

on the Marine Corps' birthday, 10 November, 1943. "Twelve torpedo bombers from Marine squadrons VMTB-143 and 223 based at Munda [flying Grumman TBF *Avengers*] then bombed and strafed the area from the Marine position to Piva Village. The front lines were marked by white smoke grenades and a Marine air liaison party guided the pilots in their strike. The first bomb fell within 150 yards of the markers. A 50-yard strip on both sides of the Numa Numa Trail was worked over by the planes, and, at 1015, the infantry began moving toward Piva Village."[112] In a commentary on the importance of ALPs and their key communications gear, the Official History states in a footnote to this engagement: the Commanding Officer (CO) of the Ninth Marine Regiment, Colonel Craig "used the LVTs [amphibious tractors] to carry two days rations and supplies for the regiment and to transport radio jeeps for the air liaison party."[113] Trained ALPs on Bougainville were a brand new development, as the ALPs on New Georgia had been ad hoc untrained personnel. Their combat prowess quickly became evident.

The Japanese severely challenged Marine Corps combined arms during the battle for "Hellzapoppin' Ridge" beginning on 13 December. The determined, disciplined Japanese had near-impregnable strong-points, with full overhead cover on a ridegline. The near vertical spur did not even appear on the Marines' maps. The Japanese had methodically prepared defenses on the reverse slope. Tree bursts from thick foliage mitigated much of the Marines' munitions, making "Hellzapopin" as tough a nut to crack as the Marines had faced to date. The artillery Marines respotted the gunline, changing the azimuth of fire onto the target, but the "overs" added to friendly casualties.[114]

On the first day of the battle, CAS strikes consisted of Marine TMFs and SBDs armed with 100-pound bombs set to .1 second delay. Not only were these attacks unsuccessful, but like the artillery "overs," caused fratricide, killing two Marines and wounding six.[115] Undeterred, the Marines planned for heavier ordnance and greater delay

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[112] Henry I. Shaw, Jr. and Major Douglas T. Kane USMC. *History of U.S. Marine Corps Operations in World War II, Volume II, Isolation of Rabaul,* (Washington, DC: Historical Branch, G-3 Division, Headquarters, U.S. Marine Corps, 1963), 240. See also

[113] Shaw and Kane, *History of U.S. Marine Corps Operations in World War II,* 240.

[114] Shaw and Kane, *History of U.S. Marine Corps Operations in World War II,* 277-279. See also Maj John R. Rentz, USMCR, *Bougainville and the Northern Solomons,* (Washington, DC: Historical Division, Headquarters, U.S. Marine Corps, 1948), 83-91.

[115] Interestingly, a map pullout after page 81 of Rentz, *Bougainville and the Northern Solomons*, two CAS attacks are depicted. One honors what later was codified in doctrine, and flown parallel to friendly lines. The other, incorrect CAS attack depicts a run-in heading perpendicular to the friendly lines, greatly increasing the chance of

fusing, in addition to dummy CAS runs. The pilots conducted detailed planning face to face with the infantry and took some of their key leaders aloft in their TMFs and SBDs. The fifth day of the battle saw the harmonization of Marine air and ground to a greater degree than had ever been accomplished.[116] "Eleven TBFs of VMTB-134 struck at 1200 from treetop level, 75 yards in front of the men of the 1st Battalion, 21st Marines. All bombs hit in the target area, but the enemy had moved to the other side of the ridge. Five of the planes landed at Torokina for another try. After dropping their bombs they made dummy runs to cover the advance of the ground troops, who thereupon bayoneted and grenaded their way through the final resistance and took Hellzapopin."[117]

Sherrod states that the air-ground teamwork that vanquished the enemy on bloody Hellzapopin' ridge "probably deserves designation as historical: for perhaps the first time in World War II aviators were credited with a support mission beyond the scope of artillery."[118] Thus at the very dawn of ground controlled air strikes, the Corps had effected a new form of air-ground teamwork, that many credited for winning the battle. "Having suffered serious casualties in their frontal assaults, Marine commanders relied on true CAS and massive artillery to dislodge the Japanese. The December attacks [at Bougainville] proved that observed artillery fire and ground-controlled air strikes were essential if the infantry was to close with the enemy still in any condition for a final assault. Some senior infantry commanders had trouble learning this lesson, but their troops proved quick converts to supporting fire tactics. In any event the seizure of the Torokina River region showed the importance of combined arms action, unrelenting supply efforts and Marine valor."[119]

Unfortunately, infantry Marines had to wait a full 18 months for dedicated ground support by Marine aviation. "Lacking carriers, Marine Aviation was left behind to become part of MacArthur's air force."[120] Dedicated ground support of the Central Pacific island-hopping campaign would come primarily from the US Navy. As of 1943,

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fratricide if munitions are dropped short of the target. In battles such as Hellapopin' Ridge the lessons for later doctrine were learned.

[116] Sherrod, *History of Marine Corps Aviation in World War II*, 190-191. See also De Chant, *Devilbirds*, 124.

[117] Sherrod, *History of Marine Corps Aviation in World War II*, 190-191. See also Shaw and Kane, *History of U.S. Marine Corps Operations in World War II*, 278-279.

[118] Sherrod, *History of Marine Corps Aviation in World War II*, 191

[119] Millett, *Semper Fidelis*, 380.

[120] General V.E. Megee USMC, "The Evolution of Marine Aviation" *Marine Corps Gazette*, September 1965, 59.

the Central Pacific gained preeminence over MacArthur's Southwest Pacific drive as the US's main effort against Japan.[121]

CAS Shortfalls at Bloody Tarawa (November 1943)

> *Casualties many; percentage dead not known; combat efficiency: we are winning.*
>
> *--Colonel David M. Shoup, Commanding Officer, 2nd Marine Regiment*

The initial amphibious assault of the Central Pacific drive was Operation Galvanic, the attack on the Gilbert Islands. Under the over-arching command of Admiral Nimitz, as Commander-in-Chief Pacific (CINCPAC), the principal target was the Japanese bastion on an atoll named Tarawa. Grand strategy and politics drove the decision for a November attack, against the recommendation of the Joint Chiefs of Staff who cautioned delay until December in hopes of more favorable tides. Admiral King, the Commander in Chief of the US Fleet, told Admiral Nimitz the offensive was a go in November "so that the British could not back down on their agreements and commitments. We must be so committed in the central Pacific that the British cannot hedge on the recall of ships from the Atlantic."[122]

The V Amphibious Corps was under the command of the acerbic Major General Holland 'Howlin' Mad' Smith, USMC. Smith directed the Second Marine Division to seize the primary target at Tarawa, the island of Betio, in consonance with the V Amphibious Force under Rear Admiral Richmond Kelly Turner USN. This was to be the initial amphibious assault of the Central Pacific island hopping campaign, aimed straight for Toyko Bay. Unfortunately for the Marine infantry assaulting Tarawa, their aviation brethren were not in support of Galvanic. The entire 1st Marine Air Wing was committed in the Solomon Islands, for land-based roles. General 'Howlin' Mad' Smith, "had earlier requested the use of escort carriers to bring Marine aviation units directly to the operation area. That was still a luxury as far as the Navy was concerned."[123]

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[121] Major Charles W. Boggs Jr. USMC, *Marine Aviation in the Philippines*, (Washington, DC: Historical Division, HQMC, 1951), 5.
[122] Kenneth J. Hagan, *This People's Navy, The Making of American Sea Power*, (New York, NY: The Free Press, 1991), 321.
[123] Col. Joseph H. Alexander, USMC, *Utmost Savagery, The Three Days of Tarawa*, (Annapolis, MD: Naval Institute Press, 1995).

Intelligence indicated that the Japanese Special Naval Landing Force of just over 4,800 had constructed elaborate defenses on the bird shaped main atoll island of Betio. Key additional intelligence came from Major Frank Holland, a New Zealand reserve officer. Holland relayed that the reef and tides were precarious around Betio, and that the Marines intent to sail Higgins boats right up to the beach may not work.[124]

One can state that the problems at Tarawa began with Major Holland's prescient words. The Japanese had not contested the Marine Corps' landings on Guadalcanal in August 1942, so there was no body of World War II amphibious combat knowledge to draw from. The Navy-Marine Corps team learned under fire and in retrospect much of modern amphibious doctrine and training stems from GALVANIC and the fierce Japanese resistance. Unfortunately, nearly 1,000 Marines paid the ultimate price for said lessons.

The preparatory fire plan was intense. "Before landing craft started for the three beaches . . . warships and carrier planes laid down the greatest naval barrage ever to pound so small a target."[125] The design of the preparatory fire was a short, but incredibly intense bombardment intended for clockwork timing to shift inland as the Marines hit the beach. "With seventeen fire support ships and carrier planes saturating Betio, Navy planners thought a short, violent bombardment would smash the defenses; Holland M. Smith and Julian C. Smith, the 2d Division commander, were not so sure." The timing linchpin began to come undone almost from the outset, reminiscent of World War I battlefield coordination fiascos. Tarawa came to resemble that previous conflict as "in many ways the battle ashore mirrored the worst trench warfare of World War I: infantry against machine guns."[126]

Although problems with naval gunfire coordination and communication arose, one of the most glaring aspects of poor fire support was CAS. "There are extenuating circumstances which go far in excusing the naval gunners, but no one has yet been able to explain fully what the airmen were doing. They were overconfident and inexperienced.

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[124] Col Joseph H. Alexander, USMC, *Across the Reef: The Marine Assault on Tarawa - World War II Commemorative Series*, (Washington, DC: Marine Corps Historical Center, 1993), 4 and 7. The Second Marine Division was stationed on New Zealand after completing combat on Guadalcanal, prior to the invasion of Tarawa.

[125] J. Robert Moskin, *The U.S. Marine Corps Story*, (Boston, MA: Little, Brown and Co., 3rd ed., 1992), 295.

[126] Millett, *Semper Fidelis*, 397.

Pilots were late when their strike could have been and should have been delivered on schedule. They were right on the spot when the exigencies of the situation below compelled delay. They not only failed to hit the target with their quota of bombs and machine gun fire, but interfered with the naval gunfire and helped to dissipate its effect."[127]

So the timing and coordination confusions caused a precipitous domino effect, when all hands should have been briefed to understand that the key events of a contested amphibious assault were event, not time driven. All timing revolves around when the landing force actually lands, not by an arbitrary planning timeline.

The timeline was not the only major problem during the assault. The straightforward tactical tasks assigned to the carrier air wings went unfinished due to a lack of ground attack capability. The Navy aviators called upon for support were brave, but in many instances, ineffective. A major problem was the lack of ALPs at Tarawa.[128] There was a weak plan for air-ground coordination, and it flaws were quickly evident. "LtComdr Henry L. Miller commanded Carrier Air Group 23 in support of the assault. As he recalled 'We thought we were pretty good with our bombs and bullets but it didn't turn out that way.' Another carrier air group commander reflected, 'The great majority of all bombs merely dug a nice well and raised a great cloud of coral dust which hampered the bombing of other planes.'"[129]

There were seams throughout the fire support plan, many of which were due to mistaken understanding of naval and air capabilities in a combat setting. A case in point was that "until Tarawa, planners assumed that naval gunfire and air support had to be sequential, not concurrent."[130] Issues like this led to the lifting of the naval gunfire bombardment as the strike aircraft headed for the beach and vice versa. Combat experience, much of it from Tarawa, proved that methods of separation and de-confliction were achievable in ways besides time, such as lateral and altitude separation.

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[127] Isely and Crowl, *U.S. Marines and Amphibious War*, 224.
[128] Head, Marine Corps Historical Branch, "Historical Data on Roles of Marine Corps Air Support (Fixed Wing) in Selected Amphibious Operations," December 17, 1968. Close Air Support Papers, Marine Corps Historical Division, MCB Quantico, Va.
[129] Alexander, *Utmost Savagery*, 105-107.
[130] Alexander, *Utmost Savagery*, 236.

The modern US Navy-Marine Corps team trains to great depth on amphibious assault elements such as the fire support plan, but in November 1943, it was novel. At Tarawa, the ever-present specter of fratricide recurred frequently, as evidenced in this harrowing example of a D-Day radio exchange between the commanding officer of 3rd Battalion / 2nd Marines Landing Team in his boat off the reef and the company commander of King Company inland, fully engaged along landing beach Red Two:

CO, 3/2 (1050):	'Do you want air support?'
K Co (1100):	'Do not call for air support until I have given you the word where our line is.'
CO, 3/2 (1115):	'Can we give you air support now?'
K Co (1120):	'Do not want air support.'
CO, 3/2 (1130):	'We have called for air support.'
K Co (1140):	'Stop air strafing! Hitting own men!'[131]

There were instances where carrier air strikes had a great effect upon the enemy, but research did not reveal detailed air-ground coordination. Captain John McJennett USMC relays in the August 1945 issue of *Marine Corps Gazette* that there were ALPs at Tarawa, but that they did not communicate directly to the CAS aircraft. "Lines of communication ran back to the Air Support Command Unit, shipborne, and manned by naval officers. This unit was the control nucleus and maintained voice contact with both the air liaison parties and the planes over a series of radio nets."[132] The simple explanation must be that Tarawa was the US's first experience with a contested amphibious operation and the Navy pilots' training had not focused on CAS.[133] Even Admiral Nimitz became aware of the shortcomings and room for improvement in Navy CAS at Tarawa declaring, "It was evident that the carrier squadrons were not fully trained to provide efficient air support of amphibious operations."[134]

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[131] Alexander, *Utmost Savagery*, 203.
[132] Captain John McJennett USMC, "Air Power for Infantry" *Marine Corps Gazette*, August 1945, 16.
[133] LtCol Keith B. McCutcheon, USMC "Close Support Aviation" report reproduced by Intelligence Section, Department of Aviation, HQMC, August 1945, pg 2. The General Keith B. McCutcheon personal collection 464, Box 2, Special Collections Branch, Gray Research Center, MCB Quantico, VA. [Hereafter McCutcheon Papers]. McCutcheon wrote "At no stage of [naval aviator] training was there any time devoted to closely coordinated attacks in support of ground forces."
[134] Head, Marine Corps Historical Branch, "Historical Data on Roles of Marine Corps Air Support (Fixed Wing) in Selected Amphibious Operations," December 17, 1968, encl. 1, page 6. Close Air Support Papers, Marine Corps Historical Division, MCB Quantico, Va.

Air strikes could have an enormous impact upon an enemy, but at Tarawa, there were far too few direct hits. Military historian and former Marine amphibious assault officer, Colonel Joseph H. Alexander, relays a successful US air strike on Tarawa from the Japanese perspective. "Warrant Officer Ota told his captors that he had 'a much greater fear of aerial bombardment and strafing' than he did of naval gunfire, adding that the constant attack of the carrier planes had a 'marked effect on the morale of his men.'[135]

The casualty rates were unprecedented for the US, especially considering how short, at 76 hours, the battle had been. In three days, the seizure of Betio cost the US 997 Marines and 30 sailors killed in action in addition to 2,233 Marines and 59 sailors wounded. On the other side, the Japanese suffered 4,690 killed. The preponderance of the 146 prisoners taken by the US had been conscripted Korean laborers. "Only 17 wounded Japanese surrendered."[136]

The bloodletting stunned the American people. Tarawa was the first US battle captured on film that was then released to the public. President Roosevelt personally consulted with war correspondent and veteran of the battle Robert Sherrod, about whether to release the film. The president took Sherrod's advice to release it and show the American people the true nature of combat.[137] The pain was not for naught on both the tactical and grand strategy levels. At the tactical level, the stark lessons of Tarawa were captured. Lessons were later utilized for the assault upon the Marshall Islands, including tighter amphibious teamwork and heavy, sustained preparatory fire. "Land-based Navy and AAF air pounded all the occupied [Marshall Island] atolls for a month, supplemented by carrier air strikes and surface bombardment. Japanese vessels and aircraft soon disappeared from the Marshalls, and the island defenses shuddered under the pounding."[138]

At the grand strategic level, the battle of Tarawa came up in discussions between President Roosevelt, Prime Minister Churchill and their senior advisors during the Cairo Conference, 22-26 November 1943. "[Commander-in-Chief, US Fleet / Chief of Naval Operations, Admiral] Ernest King could cite the commencement of the central Pacific

[135] Alexander, *Utmost Savagery*, 202-203.
[136] Alexander, *Across the Reef: The Marine Assault on Tarawa*, 7, 46 and 50.
[137] Alexander, *Utmost Savagery*, 229.
[138] Millett, *Semper Fidelis*, 400.

campaign as support for General Marshall's rebuttal of the prime minister's renewed pitch to expand operations in the Mediterranean. The U.S. Army had Overlord; the U.S. Navy had the central Pacific; the British – to paraphrase John Quincy Adams – must hereafter come as a dinghy in the wake of the American War machine."[139]

Although fully integrated Marine CAS would have to wait until early 1945 in the Philippines, the impetus to learn and improve both air-ground and inter-service teamwork was strong. All that remained was for a strong and visionary leader to step forth and drive the integration.

Lieutenant Colonel Keith B. McCutcheon - US Marine Corps' Key CAS Integrator

"I have never seen such able, close and accurate close support as the Marine flyers are giving us"

--Brigadier General William C. Chase USA, 1945

Biography

Mirroring Wolfram von Richthofen's influence on the German *Wehrmacht* and their use of CAS, Lieutenant Colonel Keith B. McCutcheon USMC, has had an immense and lasting impact on the conception of Marine Corps integrated CAS. Weapons and tactics are important, but as innovation historian Stephen Peter Rosen states, the keys to successful military innovation are "talented military personnel, time, and information."[140] After spending much of World War II in graduate studies, safely ensconced at the Massachusetts Institute of Technology (MIT), Lieutenant Colonel McCutcheon reported for duty on Bougainville, in the Solomon Islands in September 1944. The war had passed by that outpost and moved on. Undeterred, the-"tireless, utterly dedicated" McCutcheon seized an exceptional opportunity to advance the state of the art of Marine Corps CAS.[141]

Born in 1915 in East Liverpool, Ohio, Keith Barr McCutcheon was commissioned into the Marines in 1937, after graduation from the Carnegie Institute of Technology.

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[139] Hagan, *This People's Navy*, 321-322.
[140] Rosen, *Winning the Next War*, 252.
[141] United States Marine Corps History Division website: "Who's Who in Marine Corps History," http://www.tecom.usmc.mil/HD/Whos_Who/McCutcheon_KB.htm. The description of McCutcheon as "tireless and dedicated" are from Mersky, *U.S. Marine Corps Aviation*, 227.

Upon completion of the Basic School, McCutcheon served aboard the aircraft carrier *USS Yorktown* prior to flight training. Receiving his naval aviator wings in 1940, McCutcheon served in Marine Observation Squadrons aboard *USS Yorktown, USS Ranger*, and *USS Wasp* prior to World War II. Selected for advanced education, McCutcheon studied aeronautical engineering at both the Naval Postgraduate School and MIT, receiving his master's degree in 1944. McCutcheon received orders to MAG-24 in Bougainville, and reported for duty as the Group Operations Officer.[142]

MAG-24's Pilot Training Program in Air - Ground Support (Oct - Dec 1944)

Lieutenant Colonel McCutcheon, an intellectual outlier with a master's degree from MIT and what author Roger Martin terms an "opposable mind," became a force in not only the MAG, but across the Philippine Theater. He wasted no time once the October 1944 call came, that MAG-24's next assignment was air support of the US Army during its re-conquest of the Philippines.[143] A rare World War II opportunity presented itself in that the MAG had three months to prepare for their new and highly sought role to provide CAS in support of this re-conquest.

Three days after receiving the word from higher headquarters, and sensing that the MAG was "completely unprepared" for its mission, McCutcheon codified a detailed training syllabus and stood up a formal school for integrated close air support. He described the challenges in this area, and his words clearly resonate across many examples of innovation in military history. "Efforts were made immediately to assemble all the available literature on the subject but it became clearly apparent that the existing instructions were published piecemeal in many forms and much of the data was contradictory. . . it was readily apparent that the subject was far from standardized; even the nomenclature differed between organizations."[144]

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[142] United States Marine Corps History Division website: "Who's Who in Marine Corps History," http://www.tecom.usmc.mil/HD/Whos_Who/McCutcheon_KB.htm

[143] Sherrod, *History of Marine Corps Aviation in World War II*, 294. See also Martin, *The Opposable Mind*.

[144] McCutcheon, "Close Support Aviation," McCutcheon papers - 464, Box 2, page 3. The author can vouch for LtCol McCutcheon's challenge. The author culled all CAS related doctrine from the USMC and USAAF from World War II available at: the US Naval War College, US Army Heritage and Education Center's Military History Institute, the USMC Historical Archives and Special Collections Unit and viewed doctrine at the USAF's Historical Research Agency. The author found the first documented USMC 9-line CAS brief dated May 22, 1944 as a *First Marine Division General Order Number 128*.

Working feverishly, McCutcheon and the officers under his charge assembled 23 references and immediately prepared a detailed doctrine for CAS. This five-page document is a true touchstone for USMC integrated CAS, the holy grail of World War II air-ground synergy. Lieutenant Colonel McCutcheon defined CAS in the first lines of the doctrine as "an additional weapon at the hands of the infantry commander to be used against enemy forces and installations holding up the advance of his own front lines." The doctrine details the ground weapons available to an infantry regimental commander in 1944 and then states that these weapons form "a team and none is capable of doing the job alone."[145] With the doctrine established from culled sources and combat experience of the MAG staff and the Infantry, the focus shifted to establishing a dedicated training school curriculum.

Lieutenant Colonel McCutcheon and his officers prepared lesson plans for 40 separate lectures and designated 22 instructors (represented by members of MAG-24, the US Army's 37th and Americal Divisions, tank destroyer units, and the Royal New Zealand Air Force). The lecture list was multifaceted, including topics such as: "Introduction to Close Air Support, Psychology of the Japanese, The Philippines (geography, weather, people), Organization of an Infantry Division (taught by the 37th Division G-3), Artillery Spotting, Special Lecture on Close Support," and many more. Conducted between 13 October and 8 December 1944, the MAG-24 CAS school trained over 500 pilots, aerial gunners, and infantrymen.[146]

Throughout this training period, detailed and direct coordination was achieved between MAG-24 and both the US Army's 37th Division and Royal New Zealand Air Force squadrons both of whom had also received orders for combat duty in the forthcoming invasion. The friendships, coordination, and trust between these units are impossible to measure. However, multiple sources cite the bonds that developed across service and Allied lines as a strength during combat on Luzon and in the southern Philippines.[147]

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[145] McCutcheon, "Close Support Aviation," McCutcheon papers - 464, Box 2, page 4.
[146] McCutcheon, "Close Support Aviation," McCutcheon personal papers - 464, Box 2.
[147] McCutcheon, "Close Support Aviation," McCutcheon personal papers - 464, Box 2, page 3. See also Sherrod, *History of Marine Corps Aviation in World War II*, 294-301.

The training was iterative in nature between MAG-24 and the 37th Infantry Division, as evidenced by Marine pilots attending the Division's training maneuvers. Soon the two units' training goals fused together, with periods of practical application progressing from simple terrain model drills, to radio drills, to complex tactical problems in the field. The pinnacle of the training saw the 37th's infantrymen conducting live fire attacks with MAG-24 dive-bombers conducting simulated integrated CAS attacks. "Live bombs were not dropped during the training exercises, but the infantry actually fired everything in the book. In spite of this deficiency however a better mutual understanding was arrived at between the ground and air arms." All this occurred on Bougainville, in the Northern Solomons in late 1944. These Marines and Soldiers set a fine example for the integration and synergy for the modern US military. Much of the credit belongs to Lieutenant Colonel McCutcheon and the open-minded leaders of the 37th Division.[148]

Innovation historian Stephen Rosen's prophesy had come true for the aircrew of MAG-24 on the eve of combat: they benefited from the bright and talented McCutcheon and others, they had three full months, and they culled widely for doctrine and combat experience. MAG-24 almost lost on a key issue regarding CAS, when after various conferences "it was brought out that the 5th Air Force would furnish the Support Air Parties but they were not contemplating using direct communication between the Air Liaison Parties and the planes in the direction of a mission. The Navy concurred with the Air Force in this respect. It seemed to the Group that this was the only logical way to conduct close support so further emphasis was placed on training its own Air Liaison Parties. . . they were to prove invaluable in combat."[149]

MAG-24 solved this integrated CAS showstopper by training its own aviation personnel. This may be the birth of the Marine Corps' Forward Air Controller, (FAC) a designated naval aviator or naval flight officer trained to conduct terminal control of CAS or assault support aircraft. "The ALPs were not allowed [by 5th Air Force] to direct the strike because they were ground personnel and not air force. The Marine units that were placed in the front lines were permitted to exercise control because they came from air

[148] McCutcheon, "Close Support Aviation," McCutcheon personal papers - 464, Box 2.

[149] McCutcheon, "Close Support Aviation," McCutcheon personal papers - 464, Box 2, page 10.

units."[150] MAG-24 assigned pilots, including grounded pilots, to serve with these new, aircrew centered ALP teams. "If Air Liaison Parties were not to be permitted to give that control then the Group would send out its own personnel to give it."[151]

An important facet of this integrated system, and something that caused Marine ALPs to stand apart from the USAAF entities of the period, was the reduction in time from the air strike request to approval to execution. FACs on the ground leading ALP teams knew the capabilities and limitations of the aircraft supporting them intimately. They were knowledgeable on what is currently termed "weapons to target match." When these aviator FACs rejoined their squadrons, they were much more well rounded Marines, as "the things the pilots learned about ground problems while they were doing ALP work was reflected later in their own air discipline and close support work."[152]

What MAG-24 and McCutcheon really did that broke from previous combat practice in the Pacific was in their dedicated CAS plan, that the front line ALPs could control air strikes by talking directly to the attacking aircraft. "As a deliberate policy, front-line control was, to say the least, unorthodox."[153] A key and unprecedented ability was that FAC-led ALP teams could "talk" supporting aircraft directly onto a target. None of this had been possible in the previous CAS systems.[154] "McCutcheon saw CAS as a 'tool,' an 'additional weapon' which was only effective if it were used by the ground commander on the scene, or close to it, to be tasked, directed, and coordinated as he saw fit."[155]

In January 1945, the Marine Corps finally had a dedicated plan, codified in doctrine (if only at the MAG level) of fully integrated CAS. Perhaps McCutcheon, as an "integrative thinker" simply had fewer cognitive filters regarding CAS. Detailed study of other services and their predilections about CAS prior to the late stages of World War II support this.[156] The test in combat came later that month, and proved MAG-24's integrated CAS system under the aegis of Lieutenant Colonel McCutcheon was spot on.

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[150] McCutcheon, Unpublished article entitled "Army Support System" McCutcheon personal papers - 464, Box 2.
[151] McCutcheon, "Close Support Aviation," McCutcheon personal papers - 464, Box 2, page 10.
[152] McCutcheon, "Close Support Aviation," McCutcheon personal papers - 464, Box 2, page 14. See also Boggs, *Marine Aviation in the Philippines*, 129.
[153] Sherrod, *History of Marine Corps Aviation in World War II*, 295.
[154] De Chant, *Devilbirds*, 178.
[155] Mersky, *U.S. Marine Corps Aviation*, 104-105.
[156] Martin, *The Opposable Mind*, 6.

CAS in the Philippines: Double Integration via Air - Ground and Army - Marines

As General MacArthur's forces fought to retake the Philippines, much of Marine aviation was brought out of the Northern Solomon Islands and put to good use conducting fighter sweeps, CAS, reconnaissance and support to both the 6th and 8th US Armies. As US forces stormed ashore from amphibious shipping in the Lingayen Gulf, Marine Air Groups began supporting the Army. Much of this chapter has focused on single service integration (how the Marine Corps matured its utilization of CAS), but on the Luzon plain, Marine aviation conducted double integration, not just with the ground forces, but also with US Army soldiers.

The integrated CAS that the Marines accomplished in support of the drive south to Manila is today taken for granted as established doctrine, and a core of what the Marines perceive as one of its key roles. In January 1945, facets of integrated CAS such as: fixed wing assets in the "overhead" in support of the infantry, aerial flank protection (accomplished after approximately D+14 in Normandy, but the lesson learned did not reach the Pacific theater), Forward Air Controller (Airborne) {FAC(A)}, and indeed night CAS, were all unprecedented.[157] Many of these long sought capabilities began in the Philippine re-conquest. The Marines first major task proved tailor made for their capabilities.

Marine Air and the 1st Cavalry "Flying Column" Race to Santo Tomas

D-Day for the Lingayen landings on Luzon in the northern Philippines was on 9 January 1945. On D+2, the MAG-24 Commanding Officer, Colonel Jerome, Lieutenant Colonel McCutcheon and their enlisted driver went ashore to establish a Marine airfield. As MAG-24 assets landed, they established MAG HQ at Mangaldan, east of the AAF's major airstrip. The US Army's 1st Cavalry Division came ashore on 27 January and

[157] Lieutenant General Elwood R. Quesada, Oral Interview, May 12, 1975, US Army Military History Institute, Senior Officer's Debriefing Program, page 36. Modern CAS application is from author's own experience. See also Williamson Murray and Alan R. Millet, *A War to Be Won - Fighting the Second World War*, (Cambridge, MA: Harvard University Press, 2000), 419. Murray and Millet state regarding the Normandy invasion, "None of the senior U.S. commanders, including Eisenhower and Bradley, displayed the slightest interest in learning anything about his [a LNO with Pacific experience] experiences in the Pacific. In fact the prevailing attitude was that 'anything that had happened in the Pacific was bush league stuff.'" This must have been that case going the other way as well, that Normandy lessons learned in "Armored Column Cover" etc did not reach the Pacific theater in time for the January 1945 re-conquest of the Philippines.

received a visit from General MacArthur three days later, who issued one of his most "passionate orders of the war: 'Go to Manila. Go around the Nips, bounce off the Nips, but go to Manila. Free the internees at Santo Tomas.'"[158] Intelligence had come in relaying that 4,000 US citizens interred at a prisoner camp on the grounds of an old university.[159] As fate would have it, MAG-24's training partners in CAS on Bougainville were tasked to advance south to Manila on the right or west flank. In a *Marine Corps Gazette* article written in September 1945, McCutcheon described MAG-24's mission: to "provide a cover of nine SBDs continuously from dawn to dusk for the First Cavalry Division in its historic sweep toward Manila . . . the planes were the 1st CavDiv's sole flank guards (a brand new use for planes). . ."[160]

Like the key utilization of modern fixed and rotary wing attached surface force escort, in many instances the 1st Cavalry troopers were able to push hard and make good progress unhindered by the enemy simply because the "very presence of the planes" deterred the Japanese from attacking.[161] This is the essence of air-ground synergy and is impossible to accomplish without formally trained FACs integrating the air and ground team. This instance was the first documented case in the Pacific of what the AAF termed "Armored Column Cover" during the Normandy breakout, six months earlier.[162]

The Marine ALPs with the 1st Cavalry Division were key enablers for the troopers and greatly "appealed to General Chase, [leader of the "Flying Column] as did the idea of literally having nine SBDs at his fingertips."[163] This contrasted sharply with the Army ALPs with the 1st Cavalry, who dealt with communication-borne inertia as

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[158] Sherrod, *History of Marine Corps Aviation in World War II*, 297-301. See also Boggs, *Marine Aviation in the Philippines*.
1951), 64-76.
[159] General of the Army Douglas MacArthur's Staff, *The Reports of General MacArthur, The Campaigns of MacArthur in the Pacific, Volume I*, (Washington, DC: Department of the Army, US Govt. Printing Office, 1966), 272-273.
[160] McCutcheon, "Close Air Support on Luzon," *Marine Corps Gazette*, September 1945, page 38.
[161] Garand, George W. and Truman R. Strobridge, *History of U.S. Marine Corps Operations in World War II, Volume IV, Western Pacific Operations*, (Washington, DC: Historical Branch, G-3 Division, Headquarters, U.S. Marine Corps, 1971), 344.
[162] Lieutenant General Elwood R. Quesada, Oral Interview, May 12, 1975, US Army Military History Institute, Senior Officer's Debriefing Program, page 36. Modern CAS application is from author's own experience.
[163] Garand and Strobridge, *History of U.S. Marine Corps Operations in World War II*, 344.

their air support "request would have to be forwarded and approved first by Division, then Corps, then Army and finally by 308th Bomb Wing."[164]

Due to the outstanding air-ground integration between the Marines and the 1st Cavalry's "Flying Column," the team reached Santo Tomas and liberated the US citizens held captive. The drive took exactly 66 hours of hard pressing through more than 100 miles of enemy territory. In many instances, the Marines "bombed and strafed [the enemy] just ahead of the 'flying column.'" The 1st Cavalry Commanding General, Major General Mudge, USA was unsparing in his praise. "I can say without reservation that the Marine divebomber outfits are among the most flexible I have seen in this war. They will try anything, and from my experience with them I have found that anything they try usually pans out. The Marine divebombers of the First Air Wing have kept the enemy on the run. They have kept him underground and enabled troops to move up with fewer casualties and with greater speed. I cannot say enough in praise of these men of the dive bombers . . . for the job they have done in giving my men close ground support in this operation."[165]

Through it all, Lieutenant Colonel McCutcheon provided key coordination and guidance as the Operations officer back at the Marine's airfield. Before the Luzon campaign was over, Marine aviation conducted over 8,500 support sorties. AAF assets vastly outnumbered the Marines, but the incredible effort Marine aircrew men gave to their Army brothers on the ground is noteworthy. "With 13 percent of the Luzon-operated aircraft, the SBD's flew 49.7 per cent of the individual sorties."[166] Before the end of the Philippine campaign two more innovative CAS tactics were born. The Marines had a hand in the first night CAS missions and in CAS coordination from an aircraft, the antecedent of modern FAC(A). McCutcheon states in a September 1945 article on CAS, that "P-61 night fighters were vectored to ground targets and in two instances quieted Jap artillery."[167] This is the first documented case of Marines using night CAS. It is fitting that it was an integrated mission with USAAF P-61 *Black Widows* in support. Finally, McCutcheon's writings relay what is believed to be the first

[164] Sherrod, *History of Marine Corps Aviation in World War II*, 301.
[165] Unit accolades, Close Air Support papers, Marine Corps Historical Division, MCB Quantico, Va.
[166] Boggs, *Marine Aviation in the Philippines*, 106. It must be noted that the AAF's efforts in air superiority contributed materially to the Marines ability to focus on CAS.
[167] McCutcheon, "Close Air Support on Luzon" *Marine Corps Gazette,* September 1945, 39.

instance of the Marines using airborne spotting for CAS missions. The Marines first used light fixed wing L-4 *Grasshoppers*, the military derivative of the Piper Cub, for artillery spotting missions. Their first use by the Corps was in 1943, during the fighting on New Georgia. Using the *Grasshoppers* for CAS coordination was wholly new, but opened up new avenues for the tactic.

"There were a number of reverse slope position that called for planes rather than artillery and in order to permit the ALP to direct the strike he was airborne in an artillery spotting plane with direction being relayed to the planes via artillery and air nets. This shortcoming was later overcome by routing L-5 plane radios in the Marine planes so the direction could be given directly."[168]

Conclusion

Marine aviation and its CAS development covered vast physical and intellectual ground during 1919-1945, but overall stayed true to its roots of focusing on support to the ground combat element. This chapter traced the details of this evolution via a chronological structure, with a focus on fully integrated Marine Corps CAS. Clearing up common misconceptions of Marine Corps CAS, especially in the early World War II period, sources show the late stage period of the campaigns in the Pacific the most fertile ground for CAS development. The US's overwhelming materiel superiority over the Japanese clearly played a large role in defeating the Empire of Japan, but so did outstanding and visionary leaders.

The full potential of air-ground synergy, unattained by US forces in the Pacific until the late stages of World War II, is rife with many tactical, operational, and historical lessons for the modern US military. Not the least of these lessons is that some of their finest combat operations came via the harmonization of inter-service air-ground synergy. If each branch of the military services found the pinnacle of combat prowess to be unleashed via integration, then the US defense establishment's full integration shall prove most capable.

Lieutenant Colonel McCutcheon went on to other great accomplishments in his 34 year career, including early helicopter pioneering and advocacy and later as the Commanding General of the III Marine Expeditionary Force in Vietnam. A three war Marine who fought in World War II, Korea, and Vietnam, perhaps his greatest legacy is

[168] McCutcheon, "Close Support Aviation," McCutcheon personal papers - 464, Box 2, page 14.

his groundbreaking integration of not only Marine air and ground forces but with a sister service, the US Army. Recalling after the war the Marine Corps contribution to victory in the Philippines, the Commanding General of the US Eighth Army, Lieutenant General Robert Eichelberger described the pinnacle of air-ground integration.

> *There were four groups of Marine fliers who, in the interest of the integration of the services, were attached to the Thirteenth Air Force . . . These fliers had been trained by the Marine Corps with ground troops for the specific purpose of supporting ground troops. Their accomplishments were superb . . . The Marine liaison officers were always in front lines with the infantry commanders, and they were as familiar with the forward positions as was the infantry. By radio they guided in the planes, and often the target of the strike was no more than three hundred yards ahead of the huddled doughboys. Colonel Clayton C. Jerome commanded these airmen, and their accurate bombing and strafing earned them the gratitude and friendship of the 24th, 31st, and 41st Infantry Divisions. Nothing comforts the soldier, ankle-deep in mud, faced by a roadblock or fortified strong-holds, as much as the sight of bombs wreaking havoc on stubborn enemy positions. It puts heart into him.*[169]

[169] Robert Eichelberger with Milton Mackaye, *Our Jungle Road to Tokyo*, (New York, NY: The Viking Press, 1950), 250.

Chapter 3

United States Army Air Forces Integrated Close Air Support Development (1918 - 1944)

That evening [27 July 1944] the Panzer Lehr Division died. At 1700 hours a messenger rushed into [German Generalleutnant] Bayerlein's CP and reported that US tanks were within 300 yards. Fighter-bomber attacks ceased as the armor moved closer, convincing Bayerlein of the remarkably 'close cooperation between air and ground forces' in the American camp. . . fighters stayed overhead circling like buzzards until dark . . .

--Historian Thomas A. Hughes

Chapter Introduction

The US Army Air Forces' (USAAF) evolution of close air support development proceeds parallel to the previous two cases on German and US Marine Corps CAS development. With chronology as the primary framework, this chapter weaves both the key historical drivers of and detractors from integrated CAS development by the USAAF. Ironically, for much of the interwar period and into the early stages of World War II, it appeared that the USAAF had the farthest to go intellectually, doctrinally, and in practice to achieve integrated CAS. Yet this service was the first American force to achieve CAS's full integration: in June 1944 (within two weeks of the Normandy landings). The key personality pressing for and achieving integrated CAS in France was General Elwood "Pete" Quesada, USAAF.

As has been stated in the two previous case studies, there are many valuable lessons for senior government leaders, military officers, and historians regarding integrated CAS's evolution in the USAAF, in comparison with the German and US Marine Corps examples. Beginning in 1918, in the cauldron of World War I, the US Army Air Service began to conduct ground attack missions somewhat in coordination with the ground scheme of maneuver. Colonel (later General) "Billy" Mitchell was a key leader and advocate of this utilization of air power during and immediately after the war. Both his and his services' attitudes toward attack aviation changed dramatically in the

post World War I period. This shifting of focus away from ground attack happened for a variety of reasons.

The historical record is clear and is worth reviewing, especially in light of the pressures that mounted as the US entered the crucible of world war yet again in 1941. The combat chronology of the USAAF's CAS development during World War II is a rich history, fertile with lessons for modern military and governmental leadership. In the span of less than two years, November 1942 – June 1944, the USAAF evolved to conduct fully integrated CAS prior to any other US air arm.

US Army Air Service Ground Strafing in World War I

> *Pursuit pilots also attacked ground objectives or engaged in 'ground strafing' as this work came to be called. On September 12, American and French pursuit airplanes found the Vigneulles-St. Benoit Road filled with the enemy's retreating troops, guns and transport. This road was a forced point of passage for such of the enemy as were endeavoring to escape from the point of the salient. All day long our pursuit airplanes harassed these troops with their machine gun fire, throwing the enemy columns into confusion.*
>
> --*U.S. Army Air Service Chief, Major General Mason M. Patrick*

As the United States military entered the fray on the battlefields of France in the late stages of World War I, the newly created US Army Air Service had its trial by fire. Influenced to a high degree by their French allies, the "aviators' mission was largely to observe and photograph enemy troop dispositions and movements. This observation mission . . . required a pursuit force to drive off enemy attackers. Air operations could also be offensive: strikes at enemy air bases, attacks on enemy troops and depots, bombing runs on enemy trains and trucks."[1] The US Army Air Service first made major contributions to the Allied offensive during the large-scale St. Mihiel offensive. "When the St. Mihiel offensive opened in September 1918, it represented the largest concentration of air power in support of land forces assembled to that time" and the Americans were in the thick of it.[2] Here is the birth of attack aviation in the US, (known at the time as *ground strafing*). This concept of ground strafing in support of ground

[1] Millet and Maslowski, *For the Common Defense*, 371.
[2] Hallion, *Strike from the Sky*, 25.

forces led in a circuitous manner throughout the 1920s and 1930s to form the state of USAAF CAS, what they termed *Light Bombardment* on the eve of World War II.

The energetic and personally magnetic Billy Mitchell ascended as a key US Air Service leader.[3] A tireless and lifelong advocate for air power, Mitchell's views on attack aviation are germane to this thesis, as he underwent a full reversal of his thoughts on the tactic in the mid 1920s. However, CAS historian Peter Smith complimented Mitchell's World War I conceptions of attack aviation, years prior to said conversion. "Under Colonel William Mitchell they delivered a set piece example of army cooperation during the battle of the St. Michel salient in September 1918. The American flyers conducted low-level strafing attacks in support of their infantry most effectively. Mitchell was, at this stage of his career, an enthusiast for close-support tactics and had worked out a comprehensive scheme employing 1,500 aircraft which, once they had gained air superiority over the target area, were committed to working closely with the advancing Doughboys."[4]

Commissioned in 1898, Mitchell served for 16 years in the Army's infantry and signal corps branches prior to earning his designation as an aviator.[5] This resonates with both Wolfram von Richthofen and Vernon E. Megee's personal histories, as all three of these early CAS leaders served as ground officers prior to converting to their respective air arms. In 1921, Mitchell "gave the new branch of aviation its name, derived from the term 'ground attack,' current at that time, and it was he who set out its role as one of direct and intimate involvement in land battles. During offensives, attack squadrons operate over and in front of the infantry and neutralize the fire of the enemy's infantry and barrage batteries. On the defensive, the appearance of attack airplanes affords visible proof to heavily engaged troops that Headquarters is maintaining close touch with the front, and is employing all possible auxiliaries to support the fighting troops."[6]

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[3] Millet and Maslowski, *For the Common Defense*, 371.
[4] Peter C. Smith, *Close Air Support - An Illustrated History, 1914 to the Present*, (New York: Orion Books, 1990), 11.
[5] Robert S. Ehlers Jr., intro. to William "Billy" Mitchell, *Winged Defense, The Development and Possibilities of Modern Air Power – Economic and Military*, (Tuscaloosa, AL: University of Alabama Press, 2009 {original 1925}), iii.
[6] Lee Kennett "Developments to 1939," *Case Studies in the Development of Close Air Support*, ed. B. Franklin Cooling, (Washington, DC: Office of Air Force History, 1990), 43.

These words resonate with the author's conception of a key capability of CAS; to both hearten friendly troops while simultaneously terrifying the enemy, in the best case into a state of submission or even flight from the battlefield. During World War I, the US Army Air Service took a methodical approach to this issue, going as far a setting up dedicated "liaison schools with week-long instruction on air-ground cooperation for ground troops."[7] The flamboyant Billy Mitchell certainly was an air power advocate writ large, but was also known as attack aviation's "most empathetic champion."[8] Although soon to change, at the end of World War I all Air Service leaders recognized that "the true contribution of the Air Service to the military victory in Europe was in support of the other arms."[9]

Returning from war a sure and seasoned force, led by men like Mitchell (the very personification of self-assurance and expertise), the US Army Air Services' attack community faced a foe in many ways more daunting than the Germans - neglect. Attack aviation suffered much more than other Air Service roles and missions, especially as the service began a consuming quest for independence. The linchpin argument for air force service independence was that traditional ground combat would soon be obsolete, thus facilitating their cognitive shift away from aviation roles in support of the Army's ground forces.[10] Strong strategic aviation bombardment forces would soon win wars by themselves, so the logic went. "Mitchell and Foulois, both of whom had been supporters of the attack aviation concept immediately after the war, soon forgot or ignored the role it had played. The concept was then left without strong vocal and influential supporters among the air leaders at a critical period, the period during which national fiscal policies forced heavy cuts in defense spending."[11] Historian Richard Muller continues in this vein, "By the early 1930s, the Third Attack Group [the only US Army Air Service

[7] Kennett "Developments to 1939," *Case Studies in the Development of Close Air Support*, ed. B. Franklin Cooling, 22.
[8] Kennett "Developments to 1939," *Case Studies in the Development of Close Air Support*, ed. B. Franklin Cooling, 43.
[9] Ronald R. Fogleman, *The Development of Ground Attack Aviation in the United States Army Air Arm: Evolution of a Doctrine, 1908-1926.* Duke University Masters thesis, 1971, 61. Young Major Ronald Fogleman USAF, a veteran of F-100 "Misty" FAC missions in Vietnam, returned stateside and wrote this Masters thesis strongly resonates with the author. Sadly for USAAC attack aviation, the last line of General Fogleman's thesis reads: "Starting from nothing, having gone through a period of high hopes, attack aviation had fallen among hard times."
[10] Millet and Maslowski, *For the Common Defense*, 401.
[11] Fogleman, *The Development of Ground Attack Aviation in the United States Army Air Arm: Evolution of a Doctrine, 1908-1926*, 89.

dedicated attack unit] was undoubtedly a stepchild of a service that was itself a stepchild."[12] How were the lessons of effective ground attack, after having being absorbed, acknowledged, and understood, purged from the institutional brain? The history of unique pressures and personalities of the US Army Air Service from 1921-1941 provides the answer.

The Air Corps Tactical School (ACTS) and the Decline of US Army Air Corps Attack Aviation Doctrine (1926-1942)

The drama and history surrounding General Billy Mitchell's 1925 court martial for insubordination is beyond the scope of this thesis, but his thoughts and influence throughout this period are germane. "The court martial of Billy Mitchell and the passage of the Air Corps Act of 1926 marked the beginning of a period of neglect of attack aviation by Air Corps leaders. . . Within the Air Corps a certain amount of official lip service was given to the attack mission in order to escape the wrath of the General Staff, but on the whole very little constructive effort was put into the program."[13]

Prior to his 1925 court martial, Mitchell wrote a short book entitled *Winged Defense.* An air power advocacy piece, *Winged Defense* described the three great branches of an air force as Pursuit aviation, Bombardment aviation and Attack aviation. The book covered Pursuit first, dedicating eight sentences to the section and describing this branch as "the main fighting line of an air force." Next Mitchell expounded on Bombardment aviation for seven full pages. Finally coming to Attack aviation, Mitchell afforded this branch a mere three sentences, none of which articulated the vital role aviation could play in aiding ground forces. Mitchell's entire attack section reads, "Our third great branch of aviation is what we call attack. It is designed to act close to the ground and destroy ships on the seas or canals, railroad trains, motors, convoys or anything of that nature. It attacks from two or three hundred feet altitude and utilizes

[12] Richard R. Muller, "Close Air Support" *Military Innovation in the Interwar Period*, ed. by Williamson Murray and Alan R. Millett, (New York, NY: Cambridge University Press, 1996), 175.
[13] Fogleman, *The Development of Ground Attack Aviation in the United States Army Air Arm: Evolution of a Doctrine, 1908-1926,* 90.

features of the ground, forests, hills, valleys or anything of that kind to conceal its movement."[14]

In 1930, four years after leaving the service, Mitchell wrote that attack "aviation will have most of its application in the future against what are termed partisan or irregular troops, and as are found in Asia, Africa, Mexico and Central America."[15] All this simply demonstrates that even attack aviation's primary advocate shifted his views on this role for air power. The US Army Air Corps institutionally shifted its emphasis as well.

The center for the US Army Air Corps' doctrinal development and future leader education and training was the Air Corps Tactical School (ACTS). Begun in 1920 at Langley Field Virginia, ACTS moved to Maxwell Field outside Montgomery, Alabama in the summer of 1931.[16] When considering the overall history and impact of ACTS on the US Army Air Corps and US military doctrine writ large, thoughts immediately turn to what authors Graham Allison and Philip Zelikow term Model II organizational behavior.[17] "The 'episodic' history of CAS . . . resulted from the Army Air Corps attempt, through emphasis upon the importance of the strategic bombardment mission, to gain organizational status independent of the ground army."[18]

Avoiding reductionist statements such as "the focus on strategic bombing pushed all other thoughts at ACTS aside" requires a close look at the history of intellectual thought and focus at Maxwell Field's building 800 - Austin Hall. The only instructor of note who developed a reputation as an attack advocate was (then) Captain George C. Kenney. Kenney served as an ACTS instructor from 1927-1931, and in his singular advocacy an air power role that was not in line with the predominant bomber advocates, Kenney's experience parallels his fellow instructor (then) Captain Claire Chennault.[19] "After 1926 attack aviation simply became a mission with few aggressive and vocal supporters. Without the demands of a combat situation or realistic maneuvers, the War

[14] Mitchell, *Winged Defense*, 171.
[15] Kennett "Developments to 1939," *Case Studies in the Development of Close Air Support*, ed. B. Franklin Cooling, 45-46.
[16] Robert T. Finney, *History of the Air Corps Tactical School, 1920-1940*, (Washington, DC: Center for Air Force History, 1992 {reprint of the 1955 original}), 25.
[17] Graham Allison and Philip Zelikow, *Essence of Decision, Explaining the Cuban Missile Crisis*, (New York: NY, Addison-Wesley Educational Publishers Inc., 1999), 143.
[18] Benjamin Cooling, "Introduction," *Case Studies in the Development of Close Air Support*, ed. B. Franklin Cooling, 3.
[19] Finney, *History of the Air Corps Tactical School*, 48.

Department, with no organization charged with the responsibility for developing and preserving concepts such as the attack mission, allowed the idea to slowly die from a benign sort of neglect."[20] Kenney, who later served as General MacArthur's senior USAAF leader in the Southwest Pacific campaign, did not allow for attack aircraft controlled by front line ALPs.

Indeed the record shows that Kenney was an ardent advocate of what would later be termed interdiction, not CAS. "While the theoretical design of attack aircraft was evident, the issue of the targets they would strike was continually debated. The discussion centered on whether attack aviation was best used against the opposing front-line forces or targets further removed. During Kenney's time at the Tactical School he emphasized the latter, reasoning that the friendly ground forces should be able to defeat the enemy forces facing them while attack aircraft were used against reinforcements. . . Kenney was helping pioneer the use of aviation in what would later be labeled 'interdiction."[21]

As stated previously, some hoped this would negate traditional ground engagements all together. Avoiding attritional warfare is certainly noble, and to be fair, the airmen at ACTS in the young Army Air Corps were in uncharted waters as they attempted to organize, train, and equip their service. Perhaps a major obstacle was the focus on air power to the exclusion of the other armed forces, the antithesis of Roger Martin's integrative thinking.[22] Aviation historian Richard Muller is less kind in his critique of ACTS's premise in the interwar years. "No matter what the mission, much doctrinal thinking at the Air Corps Tactical School occurred in a vacuum; it took place almost entirely apart from national security or political imperatives. No less an authority than the school's commander 'didn't know, or at least could not remember, what strategic assumptions underlay the development of air doctrine at that time. It was surely a question that was much evaded during the entire interval between world wars.'"[23]

[20] Fogleman, *The Development of Ground Attack Aviation in the United States Army Air Arm: Evolution of a Doctrine, 1908-1926*, 84-85.
[21] Thomas E. Griffith Jr., *MacArthur's Airman, General George C. Kenney and the War in the Southwest Pacific*, (Lawrence, KS: The University of Kansas Press, 1998), 26.
[22] Roger Martin, *The Opposable Mind, Winning Through Integrative Thinking*, (Boston, MA: Harvard Business Press, 2009), 6..
[23] Muller, "Close Air Support" *Military Innovation in the Interwar Period*, ed. by Murray and Millett, 174.

A review of the 1937 "Attack Aviation Course" material does not reveal any mention of air-ground synergy or specifics on how the air and ground arms would coordinate in battle. The material does go into depth on the history of attack aviation filling up seven full pages of the eleven page text, including commentary on the USMC's CAS experience in Nicaragua. Unfortunately for CAS development, it described the "principal missions of attack aviation" as:

a. The destruction and neutralization of antiaircraft defenses in the support of bombardment aviation.
b. The destruction of aircraft at rest.
c. The attack of vulnerable seacraft.
d. The destruction or interruption of movement of personnel and materiel.[24]

It is highly probable that this or an earlier version was authored by Captain Kenney, who proclaimed, "I taught attack aviation there [ACTS] and wrote the text book on it and developed the tactics by using the class as tools to build the tactics, at low altitude work."[25] There was a cognitive filter that caused an over emphasis on aviation, to detriment of the other combat arms. ACTS historian Robert Finney stated that by 1935, the institutional view of ground support coming from Austin Hall focused squarely on hostile air forces. Once hostile air was defeated, everything else in war would fall in train: "Once the air force had defeated the hostile air arm, its subsequent operations, by denying tactical concentration to the enemy, would automatically support the ground forces."[26] Historian Thomas Hughes reveals ACTS neglect of attack aviation. "In lectures, class time, and graded material, no topic suffered more than instruction in air-ground operations. At once between and beyond the pursuit-bombardment debates, combined operations had no champion in the interwar years. The ACTS's only course on the subject while [CAS pioneer] Quesada attended Maxwell, 'Aviation in Support of Ground Forces', required a mere day and counted as only one fortieth of the final grade . . . the text authors went on to write that targets in range of field artillery were not legitimate objectives for air power, except in extreme circumstances."[27]

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[24] Air Corps Tactical School, *Attack Aviation Course*, Maxwell AFB, 1937, USAFHRA 168.7045-30.
[25] General George C. Kenney, interview by Col. Marvin Stanley USAF, US Air Force Oral History Interview, undated, USAFHRA K239.0512-747.
[26] Finney, *History of the Air Corps Tactical School*, 72.
[27] Thomas Alexander Hughes, *Over Lord: General Pete Quesada and the Triumph of Tactical Air Power in World War II*, New York, NY: The Free Press, 1995), 57.

Clearly this set of circumstances could not lead to synergistic CAS. Beyond the central Alabama classrooms at ACTS, line squadrons experienced challenges with attack roles and missions in this era as well. "Doctrinally, the airmen of the attack squadrons worked in a void. They devised their own tactics, which were never incorporated into a tactical manual. They carried out experiments that apparently were not recorded or passed on."[28]

Although most likely unaware of all the specifics related above, the Army was concerned about the Air Corps' focus shifting away from aviation roles that supported their ground missions.[29] The interwar era was one of drastic technological change and greatly increased gravitas for both the Army and Navy's air arms. "By the eve of World War II the air fleet had virtually supplanted the battlefleet as the uniquely American first line of defense – at least in the popular imagination."[30] This may help to explain why the Army General Staff could not keep the Air Corps even slightly engaged with what the airmen perceived were Army support missions. "A series of crashes, some related to the emergency use of the Air Corps to carry the air mail in 1934, galvanized public interest and dramatized the shortcomings of the five-year expansion program authorized in 1926. More importantly, the General Staff recognized that the Air Corps had a persuasive political case for more independence and feared that Congress would give it the status of a separate service, which would further erode the aviators' commitment to missions related to ground campaigns."[31]

As early as 1920, a text at the Army's Command and General Staff College at Fort Leavenworth, Kansas stated, "Teamwork with the ground troops was the basic idea" behind having an Air Service.[32] The Army's concern about the Air Corps pulling away from support missions was legitimate. "Bomber development fueled the Air Corps campaign for additional autonomy from the ground forces and the General Staff."[33] This focus came to pervade the entire interwar period.

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[28] Lee Kennett, "The U.S. Army Air Forces and Tactical Air War in the Second World War," *The Conduct of the Air War in the Second World War, An International Comparison,* ed. by Horst Boog, (Providence, RI: Berg Publishers Ltd., 1992), 460.
[29] Millet and Maslowski, *For the Common Defense,* 404.
[30] Millet and Maslowski, *For the Common Defense,* 401.
[31] Millet and Maslowski, *For the Common Defense,* 404.
[32] I.B. Holley Jr., *Ideas and Weapons*, (Washington, DC: Air Force History and Museums Program, 1997), 171.
[33] Millet and Maslowski, *For the Common Defense,* 403.

Perhaps worst for CAS development was the fact that there were no longer ties, be they personal, doctrinal, or mission-related, between the air and ground branches of the Army. One need not delve too deeply into the history to perceive that if war had broken out in the mid 1920s or 1930s, the US Army and Army Air Corps team would have required the lessons of the battlefield to refocus and mend the rift. This became evident in the early years of World War II. "While the nature and extent of air support to ground forces was the subject of differing viewpoints throughout the thirties, the organizational linkage for that support was never fully developed or tested."[34] In 1936 the commander of the newly formed General Head Quarters Air Force, General Andrews even "took strong exceptions to the term *air-ground military team*."[35]

This set of circumstances is not entirely the Air Corps fault, as prior to 1947 they were still under the aegis of the US Army. Ultimately, Army senior leadership and the General Staff allowed this set of circumstances to occur. "The most amazing thing, however, is that despite this mutual recognition of the air forces' support role, neither the Air Corps nor the General Staff had devised the machinery necessary for executing it. When World War II began in Europe, there still was no consolidated, clear-cut, concrete body of doctrine, nor for that matter even a field manual dealing with air-ground cooperation and direct support of ground troops."[36]

The ACTS mission and mandate were noble. This institution aided in the intellectual, doctrinal, and leadership development of what became the world's strongest air arm by mid-World War II. However, the lack of attention on attack aviation by the Air Corps left the Americans ground attack role years behind their German foe at the outset of World War II. As revealed earlier, the Germans were conducting CAS, albeit not fully integrated, since 1939 in Poland and had the benefit of a full combat rehearsal in Spain. The history of the interwar period reveals that US airmen could have learned much more from a detailed study of international conflicts and by the exchange of more liaison officers overseas. After 1939 during the period of World War II that the US

[34] Kennett "Developments to 1939," *Case Studies in the Development of Close Air Support*, ed. B. Franklin Cooling, 48.

[35] Frank Futrell, *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force 1907-1960*, (Maxwell AFB: Air University Press, 1989), Vol. I, 84. Emphasis in original.

[36] Robert T. Finney, *The Development of Tactical Air Doctrine in the U.S. Air Force, 1917-1951*, (Maxwell AFB, AL, not dated), 15-16.

remained out of the conflict, institution learning regarding army support roles should have been faster, but this does not take away the speed with which the airmen learned once exposed to combat, first in North Africa in November, 1942.

The State of US Army Air Force Light Bombardment on the Eve of World War II

In late 1939, ACTS changed the official air power terminology for *attack* aviation to *light bombardment*.[37] This was in keeping with the Air Corps' institutional shift during the interwar period toward bombardment aviation. Its focus in this regard was on interdiction, not CAS, as the 1940 ACTS text for *Light Bombardment Aviation* makes clear. "To use this force on the battlefield to supplement and increase the firepower of ground arms is decidedly an incorrect employment of this class of aviation, since it would neglect the more distant and vital objectives."[38] The aircraft the Air Corps ordered during this period reflected this thinking, symbolized by the Douglas A-20 *Havoc's* introduction in 1938. Many of these aircraft proved unsuited to CAS in World War II, as "twin engine attack aircraft, to survive, had to operate at higher altitudes, in a fashion akin to more conventional medium bombers attacking in formation."[39] The Lockheed P-38 *Lightning*, and in certain roles, the Northrop P-61 *Black Widow* did go on to prove they were exceptions.

The newly renamed US Army Air Forces' (USAAF) focus on the eve of World War II did not bode well for air-ground coordination. An officer of the General Staff at the outbreak of World War II noted the Chief of the Air Corps, General "Hap" Arnold's thoughts in this regard. "His faith in heavy long-range bombers was unbounded, and this faith carried into action gave the U.S. outstanding position in strategic aviation, and ultimately supremacy in the air. But there was little thought given to the ground troops or to their problems, second place going to pursuit type planes."[40]

[37] Kennett "Developments to 1939," *Case Studies in the Development of Close Air Support*, ed. B. Franklin Cooling, 52.
[38] Kennett "Developments to 1939," *Case Studies in the Development of Close Air Support*, ed. B. Franklin Cooling, 52.
[39] Hallion, *Strike from the Sky*, 49. See also Muller, "Close Air Support" *Military Innovation in the Interwar Period*, 180.
[40] Kennett "Developments to 1939," *Case Studies in the Development of Close Air Support*, 60.

The 1941 Louisiana and Carolina maneuvers saw air-ground coordination in the last large-scale training environment prior to US entry in World War II. The challenges in effecting this coordination quickly became evident. Once the infantry called for air support during the Louisiana maneuvers, it took an average of 70 minutes for the aircraft to arrive on station.[41] When they did arrive, the doctrine of that era did not allow for direct coordination between an ALP-type entity and the aircraft. During the training maneuvers, the 70-minute wait combined with poor coordination concerned army leaders, who were by then aware of the Nazi's combined arms Blitzkriegs through Poland and France. The coordination issues were concerning the highest echelons of the ground army. After the Louisiana maneuvers, Major General Leslie J. McNair, the commander of Army Ground Forces stated, "A new and more serious problem has come along - - cooperation between air and ground forces. Without this vital teamwork, the vast power of aviation is futile; with it, the infantry, shielded and pulled forward against all obstacles. Events in Europe have proved conclusively that aviation itself is indecisive."[42] Aviation historian David Syrett articulates the justification of McNair's thoughts in this regard "by the end of 1941, it had become clear that the AAF conducted operations according to its own concept of air power, without regard for the needs of ground forces."[43]

As late as September 1942, air-ground training was occurring on a "crash basis," that gravely concerned Major General Jacob L. Devers USA, a forward thinking armored leader. General Devers wrote to General Arnold "to let you know that I still stick to my opinion that there is no air-ground support training. We are simply puttering. Cannot something be done?"[44] A major problem that impeded integrated CAS in the US Army Air Corps was their perspective on control. Some of this went back to ACTS, where "the school opposed, vigorously and vociferously, the assignment of combat elements of the air force to Army formations. It held that even when a segment of the air force was allotted to the task of close support it should be retained under the centralized control at

[41] Kennett "Developments to 1939," *Case Studies in the Development of Close Air Support*, 55.
[42] Colonel Kent Roberts Greenfield USAR, *Army Ground Forces and the Air-Ground Battle Team, Including Organic Light Aviation Study No. 35*, (Fort Monroe, VA: Army Ground Forces Historical Section, 1948), 8.
[43] David Syrett, "The Tunisian Campaign, 1942-43," *Case Studies in the Development of Close Air Support,* ed. B. Franklin Cooling, 157.
[44] Kennett "Developments to 1939," *Case Studies in the Development of Close Air Support*, ed. B. Franklin Cooling, 56.

theater level in order that its inherent flexibility might be exploited."[45] This would not bode well for integrated CAS development in the early years of World War II.

Unlike the single service Marine Corps experience, there were two major, separate institutions that integrated CAS had to bridge to be effective in the US Army sphere. Immediately after World War I, the US Army and US Army Air Corps diverged in certain intellectual and doctrinal areas, none more so than what evolved into CAS in World War II. "The lack of dialogue between air and ground leaders had more serious effects on the evolution of CAS than on any other aspect of air power."[46] There were those who looked forward, with what in hindsight we see as prescience. For synergy between the US Army and US Army Air Forces, the key leader was Elwood "Pete" Quesada. As early as 1936, while attending Fort Leavenworth's Command and General Staff School, Quesada's views were clear: "although his fellow flyers would disagree with him, he thought that 'future war will require all sorts of arrangements between the air and the ground, and the two will have to work closer than a lot of people think or want.'"[47]

In review of the USAAF's preparation for tactical roles in World War II, historian Williamson Murray reflected how inter-service cooperation suffered. "The Anglo-American air forces, reflecting their generally ahistorical framework, however redefined that classic framework [political, strategic, operational, and tactical] in such a fashion as to influence not only their adaptation to the conditions of war in the Second World War but also their willingness to co-operate with the other services."[48] Unfortunately, for the US Army infantrymen, the USAAF began combat operations in World War II "with only a vestigial capability for CAS."[49] The US Army - USAAF team was in action in Operation TORCH, the invasion of North Africa, only two months after the Devers to Arnold letter was written. If the Army - AAF team had considerably further to go regarding integrated CAS development than the Marine Corps, it is to the soldiers' and airmens' credit that they brought the tactic to fruition over six months prior to the

[45] Finney, *History of the Air Corps Tactical School*, 73.
[46] Kennett "Developments to 1939," *Case Studies in the Development of Close Air Support*, ed. B. Franklin Cooling, 58.
[47] Hughes, *Over Lord*, 63.
[48] Williamson Murray, "Influence of Pre-War Anglo-American Doctrine," *The Conduct of the Air War in the Second World War*, ed. by Horst Boog, 241.
[49] Muller, "Close Air Support" *Military Innovation in the Interwar Period*, ed. by Murray and Millett, 155.

Marines. There was however, significant combat between the TORCH landings in November 1942 and D+12 at Normandy.

US Army – US Army Air Forces' Coordination Trial by Fire: North Africa (1942-1943)

As US forces stormed for Operation Torch in November 1942, the state of US Army and USAAF air-ground coordination left much to be desired. During this initial US campaign in the European Theater of Operations (ETO), the Americans learned, grew and conducted key reorganized. Many of these reorganizations were for the better, but controversial aspects emerged within the Army - USAF team. No stimulus known to man is as powerful as the prospect of defeat in combat, and it is to the Americans credit after early combat debacles epitomized by Kasserine Pass, that they proved such fast learners.[50]

The North African endeavor was a pivotal campaign for US forces, as their level of combat prowess greatly improved in a relatively short span of time. The Allies had in Lieutenant General Dwight D. Eisenhower USA, a leader who was adept at team building, with both Allies and the disparate services of air, naval, and ground forces. Historians Murray and Millett state, "Eisenhower was a man willing to subordinate his ego for the greater good. And his personality was such that he was able to get a group of diverse officers from different services and different nations to pull together as a team."[51]

At the outset of the campaign, US combat capability overall and air-ground teamwork in particular was in need of improvement. An official USAAF history published immediately after the war articulated this challenge well when it stated, "the air-ground tactical team . . . born of resourcefulness and necessity, cradled in the African desert, the lusty infant quickly grew into a creature of bone and sinew."[52] In the initial stages of the North African campaign, the cavalcade of problems, shortcomings, and errors that plagued the US effort were some of the worst faced by the nation in all its

[50] Williamson Murray and Alan R. Millett, *A War to Be Won - Fighting the Second World War*, (Cambridge, MA: Harvard University Press, 2000), 300.
[51] Murray and Millett, *A War to Be Won*, 272.
[52] Headquarters, Army Air Forces, *Air-Ground Teamwork on the Western Front, The Role of the XIX Tactical Air Command during August 1944*, (Washington: DC, HQ AAF, 1945), 1.

military history; thus the analogy of childbirth, always a painful experience that can, in the end, be blessed with hope.

Predictably, based upon its interwar history and institutional focus, once the US entered the war in Europe, the USAAF focused on strategic bombing of the enemy. Again, official USAAF historians writing only four years after the war did not pull punches regarding this focus. "AAF participation in the North African campaigns had not come by its own choice: it sent units to the Middle East because the alternative was even more distasteful; it saw in TORCH a diversion from the bomber offensive in Germany. Yet in Africa, the AAF mastered in a short time and at small cost the basic principles of the difficult science of air-ground cooperation which it was to apply decisively in the overthrow of Fortress Europe."[53]

The author takes issue with Craven and Cates' statement "at small cost" but their overall point, when considering the strategic level of war in World War II, is valid. The teething pains and stark lessons are harder to stomach in retrospect, when viewed with the knowledge that late stage interwar air-ground training and coordination had such a low priority. Both army ground forces and the USAAF were culpable in this regard.

Poor US Combat Capabilities at the Outset of Torch

Almost from the outset of the campaign, major challenges and shortcomings at the operational and tactical level of war were apparent. Initially fighting weak Vichy French forces, the Americans pushed west to engage the Germans who had rushed east to occupy all of Tunisia. Many of the challenges that degraded Allied combat power were unavoidable, but lamentably many should have been anticipated. "Air planners, busy sketching high-tech strategy with big bombers, had failed to address the mundane and ageless campaign burdens of weather, terrain, and disease. Eisenhower himself believed that inattention to these stubborn but predictable problems had affected the scope of air activities, and to solve many of these difficulties he instituted sweeping changes in air forces."[54]

[53] Wesley Frank Craven and James Lea Cate, ed., *The Army Air Forces in World War II, Vol. II, Europe: Torch to Pointblank August 1942 to December 1943,* (Washington, DC: Office of Air Force History, 1949), 205.
[54] Hughes, *Over Lord,* 88.

Soon the seasonal mud and cold of North Africa were the least of the Allies problems, as they engaged an experienced, determined enemy who were adept at combined arms combat. The first major problem was in the misallocation of air power, much of which emanated from the ground forces. "The U.S. II Corps Commander [Maj Gen Lloyd Fredendall, USA] wanted aircraft flying over his troops for a forty-eight hour period preceding an offensive, to protect them from German air and artillery activity."[55] In the modern military services, General Fredendall is widely recalled as one of the weakest combat leaders in all of US military history. ". . . Fredendall, one of the few bad appointments Marshall made in the war . . . quartered in a deep cave far from the battlefield, Fredendall deployed his forces badly and then failed to provide leadership in the crisis that occurred when Rommel attacked. The result was a tactical setback at Kasserine Pass, one that should not have been entirely unexpected, given how little time the Americans had had to train."[56] Murray and Millett's point is valid, but the training they reference must refer to training conducted in theater. There is no doubt that General McNair and other prescient leaders would have taken exception to the statement, as they had been pressing hard for realistic training for years.

In the dark days of early North African combat leading up to and at Kasserine Pass, US combat prowess and air-ground coordination was at a low ebb. General Omar N. Bradley wrote after the war that the debacle at Kasserine Pass "was probably the worst performance of U.S. Army troops in their whole proud history."[57] Facing a foe known for combined arms combat, this was the facet of World War II tactics and operational art where the Americans had the most to learn. "The US Army was inept at combined arms - the essence of modern warfare, which requires skillful choreography of infantry, armor, artillery, airpower, and other combat forces."[58] The airmen were culpable here as well, much of the problem being their cognitive focus. Historian Thomas Hughes stated, "the US Army Air Forces were as responsible as any combat arm for the poor showing of American forces. The air arm's prewar stress on independent bombardment rendered it

[55] Syrett, "The Tunisian Campaign, 1942-43," *Case Studies in the Development of Close Air Support*, ed. B. Franklin Cooling, 169.
[56] Murray and Millett, *A War to Be Won*, 300.
[57] Hallion, *Strike from the Sky*, 169.
[58] Rick Atkinson, *An Army at Dawn, The War in North Africa 1942-1943*, (New York, NY: Henry Holt and Co., 2002), 159-160.

pilots poorly prepared for the desert. The fundamentals of strategic bombardment and the plans of AWPD-1 had assumed an enemy with a traditional economic infrastructure, but in the desert there was no industrial base, and the lines of communication were primitive. The enemy's civilian population lay a thousand miles to the north; bombing sand piles would not break their morale or will to resist."[59] At this early stage of combat in Tunisia, the Luftwaffe displayed solid air-ground teamwork, and "threw itself into the fray with élan and vigor" while the US had a lot to learn.[60]

A Dark Chapter in US Military History: Air-Ground and Ground-Air Fratricide

The set of circumstances relayed above was rife for fratricide. Indeed a horrid aspect of this campaign is that US fratricide occurred both from air to ground and from ground to air. In some surface to air engagements these were deliberate acts, based upon fears of all aviation assets and ignorance. The following detailed example from early in the Torch campaign is chilling.

> On the rare occasions when Allied planes dominated the skies, fratricide added to the ground troops' torment. Word soon spread of an incident . . . where a company of American tank destroyers was helping to secure the town . . . when 11 US P-38s *Lightings* flew over. Jubilant at the unexpected help from friendly fighters, the tank destroyer crews raced across the open terrain, waving and smiling. . . the P-38s languidly circled until the sun was behind them, then dropped to 50 feet and executed five textbook strafing runs in three minutes. The attack all but destroyed the shocked company, which fired not a single retaliatory shot. Five men were killed – including the unit's only World War I veteran – and 16 wounded; nearly every vehicle and anti-tank weapon was destroyed or damaged. One outraged company commander in the 1st Armored Division ordered his men to shoot any airborne object larger than a goose. And another bromide circulated among American soldiers: "If it flies, it dies."[61]

Historian Rick Atkinson then goes on in the same passage to state it went both ways: "Allied pilots grew so accustomed to being fired upon by their own troops that the

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[59] Hughes, *Over Lord,* 86.
[60] Hallion, *Strike from the Sky,* 170.
[61] Rick Atkinson, *An Army at Dawn, The War in North Africa 1942-1943,* (New York, NY: Henry Holt and Co., 2002), 201-202.

formula for recognizing enemy aircraft on the ground, "WEFT" – check the Wings, Engine, Fuselage, Tail - was said to mean "Wrong Every Fucking Time."[62]

The combat pilot's age-old challenge of proper target location reared its head here, and on modern battlefields, it still constitutes one of the largest challenges to effective CAS. However, in 1942-1943, target acquisition was much more difficult and many green, poorly trained, or simply poor pilots caused fratricide. Air-ground fratricide has occurred in all conflicts since the dawn of aerial weapons, but here it caused a divergence of air-ground teamwork. At the outset of the North African campaign, there was hardly any to US air-ground teamwork to speak of. "When close combat support was given in the Tunisian campaign, aviators had difficulty in distinguishing targets on the ground, and they bombed or strafed friendly troops to such an extent that higher commanders habitually set bomb lines far in advance of their positions."[63] This is the antithesis of air-ground synergy. Atkinson's vignette of dual fratricide articulates this low point. "The coordination of ground and air forces remained dismal, however. Fratricide flourished despite standing orders not to fire at airplanes until fired upon. In three Allied fighter groups alone, friendly fire destroyed or damaged 39 planes. And error cut both ways: disoriented B-17 Flying Fortresses on February 22 missed their intended targets in Kasserine Pass by ninety air miles, killing many Tunisians and battering the British airfield near Souk el Arba."[64]

North African Air Priorities – Air Superiority and Aerial Interdiction

CAS during the US's European trial by fire proved problematic on many levels. First and foremost was the fact that the USAAF had higher tactical and operational priorities to fulfill. This reality never set in among some of the ground forces, and although easy to see why, the cold fact is that very rarely in US military history post-1918 has US air power had to prioritize the way it did in North Africa. The first challenge to the USAAF was to gain air superiority.

Dependent upon the scale of conception or operation, the requirement for air superiority can range all the way from full theater air supremacy, down to finite-time,

[62] Atkinson, *An Army at Dawn*, (New York, NY: Henry Holt and Co., 2002), 202.
[63] Greenfield, *Army Ground Forces and the Air-Ground Battle Team*, 45.
[64] Atkinson, *An Army at Dawn*, 392.

geographically localized air superiority. The realities of combat faced by US forces in the early stages of the North African campaign were such that CAS's priority was third place and the state of US air power did not allow all three priorities prosecuted simultaneously.

Part of the reason air superiority and aerial interdiction ranked above CAS was deliberately opaque at that time. The Allies were in receipt of Top Secret *ULTRA* intercepts. Ultra was the penultimate operational and strategic intelligence and its acquisition facilitated the focused aerial interdiction that contributed mightily to the Axis defeat in this theater.[65] Historians Williamson Murray and Alan R. Millett are clear on these points. "In early March 1943 . . . the situation of Axis forces in Tunisia was rapidly deteriorating. Allied fighter aircraft had gained the upper hand, so that the Stukas could no longer operate without suffering heavy casualties . . . but it was the unceasing Allied air campaign against Axis shipping and ports that bit most deeply. Informed by Ultra of virtually every Axis air and naval movement, Allied air attacks devastated the convoys crossing to North Africa."[66]

In one five-week period, the Germans lost over 200 large transport aircraft sent to aid the increasingly desperate Axis forces in Tunisia.[67] There were periods of intense combat between November 1942 and March 1943 and the focus on air superiority and interdiction proved correct, despite the ground forces' frustrations. This proved correct at the operational and strategic levels, as in this era the USAAF was not strong enough vis-à-vis the enemy to take on these two roles plus CAS simultaneously.

At the tactical level, North Africa remains one of the largest challenges a US combat air arm has ever faced. In all other instances in US military aviation history, American air power was never so circumscribed. Written in 1989 in an official USAF special study on CAS, historian I. B. Holley Jr. revealed that "the priority accorded to CAS remains noticeably subordinated in Air Force thinking – in this case in fifth place behind strategic aerospace offense, strategic aerospace defense, counter air, and air

[65] Syrett,"The Tunisian Campaign, 1942-43," *Case Studies in the Development of Close Air Support*, ed. B. Franklin Cooling, 177.
[66] Murray and Millett, *A War to Be Won*, 301.
[67] Murray and Millett, *A War to Be Won*, 301.

interdiction." This thesis aims at providing the historical bedrock for modern and future CAS debates.

CAS Proves Problematic in North Africa

When interviewed in 1975, World War II CAS pioneer Lieutenant General "Pete" Quesada, USAF (ret.) described CAS tactics in the North African theater, where he served as the Deputy Commanding General for the North African Coastal Air Force.[68] "The techniques . . . [FACs with the ground element talking directly to CAS aircraft] were not used to any great extent in Africa because the forces were a smaller size; and the fighting was usually not prolonged in a certain area on a lineal basis with a front. . . there wasn't very much of a necessity for this very close support that occurred in Normandy."[69]

Although on a different scale, CAS challenges, the fight for local air superiority, and the vital role of aerial interdiction actions in North Africa echo with the Cactus Air Force's experience on Guadalcanal just a few months prior. Especially early on, Allied air strength paled in comparison to what it grew to by the end of the campaign. "The campaigns in Northwest Africa . . . did not lend themselves to important close air support operations. [Air Vice Marshal] Coningham directed the weight of the Northwest African Air Force's attacks against enemy air forces and supply lines. Almost no close air support operations were undertaken, with the exception of such actions as the Battle for El Hamma, from April 3-9 . . . [where] very small numbers of attacks [were] carried out in direct support of ground forces."[70]

CAS ground support missions in North Africa proved highly problematic. Many of these challenges resonate with modern pilots and FACs. Understanding the totality of the circumstance in hindsight should not excuse the poor state of 1942-1943 CAS. "Tanks, [after Kasserine Pass] because of the difficulty in destroying them, would be left alone, to be dealt with by the ground forces."[71] This sorry state of affairs, with air power unable to aid ground forces in an anti-armor role, is a cautionary tale that should be remembered for the modern airman and soldier alike.

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[68] Hughes, *Over Lord,* 90.
[69] Quesada, Oral Interview, May 12 1975, 14.
[70] Syrett, "The Tunisian Campaign, 1942-43," *Case Studies in the Development of Close Air Support,* ed. B. Franklin Cooling, 179.
[71] Hallion, *Strike from the Sky,* 171.

Another poorly understood aspect, vital to tactical operations, was logistics and support. The lack of airfields, with many at the outset inoperable due to seasonal mud, meant another recurring challenge to CAS in North Africa; the lack of solid on-station time of CAS aircraft.[72] "Allied fighters, by contrast [to the Luftwaffe] operated from crude dirt fields at such a distance - Bone, for example, lay 135 air miles from Tunis – that they could rarely loiter more than ten minutes over the battlefield."[73] As the Germans retreated northeastward and their enclave shrunk, it aided Luftwaffe efforts and resulted in reduced in-flight transit times to and from the front.

Finally, there was the lack of any ground controller system. The tactics here were similar to many described in previous chapters, namely: bomb-line tactics, pre-planned strikes, and smoke utilization, but no direct air-ground communication in 1942-1943.[74] Understanding the interwar history does cause consternation in this regard, as aviation historian David Syrett states "the only apparent causes [of CAS ignorance] were the basic naiveté and overconfidence of an expedition untested by battle and the failure to transfer close air support concepts between theaters of operation."[75] We have seen the dearth of interwar air-ground training, and North Africa is where it first stung. "As these [American air doctrine] problems mounted, Eisenhower griped about 'our own air's fumbling and apparent inability to hit' German strongpoints. Arnold admitted as much, reporting to President Roosevelt that the 'air participation in the North African campaign are [sic] still a rather difficult arrangement to work out.' Following yet more reports of poor air support, Arnold promised a renewed effort to develop air-power applications to aid the desert soldiers."[76]

[72] Syrett, "The Tunisian Campaign, 1942-43," *Case Studies in the Development of Close Air Support,* ed. B. Franklin Cooling, 161.
[73] Atkinson, *An Army at Dawn,* 184.
[74] Quesada, Oral Interview, May 12, 1975, 14.
[75] Syrett, "The Tunisian Campaign, 1942-43," *Case Studies in the Development of Close Air Support,* ed. B. Franklin Cooling, 160.
[76] Hughes, *Over Lord,* 87.

The Overhaul of Tactical Air Power Doctrine and Organization in North Africa

Right below Eisenhower's command echelon, were major issues with air organization, leadership, and air-ground doctrine. Some of these problems were corrected in North Africa, while some continued to fester. The official US Army ground forces historical study written in 1948 was clear. "There was but little close teamwork between American air and ground unites in the Mediterranean area during 1942 and during most of 1943. In what little there was, the organization set up under FM 31-35, with its parallel channels and complex machinery, worked so slowly as to render air support generally ineffective. Ground commanders in the Tunisian campaign were impressed by the fact that the Germans were getting support promptly while they were not."[77]

It was during these dark days in US air power history that three seasoned British leaders showed the path to more efficient airpower utilization, that in some measure remains with modern USAF doctrine: General Bernard Law Montgomery, Eighth Army Commander and Air Vice Marshals Arthur Tedder and Arthur "Mary" Coningham. Their first priority corrected what they perceived as the squandering of tactical air power. Widely quoted later, Air Vice Marshal Tedder "felt that aircraft 'have been frittered away in penny packets' by 'attacking targets all on the orders of local Army Commanders.'"[78] Indeed, the reformers often cited the discredited Major General Fredendall's 48-hour air umbrella example, with airmen correct in voicing concern with the inefficiencies inherent in *FM 31-35* [the 1942 air-ground doctrine] that subordinated tactical air to the army corps echelon. The cumbersome nature of the air-request communication process made this all the more problematic in late 1942-1943. "The ASC [Air Support Command] often did not find out about Army needs until after the fact."[79] The Kasserine Pass debacle rightly led to the scrapping of *FM 31-35*.

General Montgomery stated he thought air power's greatest strength was its inherent flexibility. It could honor the age-old military maxim of mass and then shift to a

[77] Greenfield, *Army Ground Forces and the Air-Ground Battle Team*, 77.
[78] Syrett, "The Tunisian Campaign, 1942-43," *Case Studies in the Development of Close Air Support*, ed. B. Franklin Cooling, 167.
[79] Hallion, *Strike from the Sky*, 170.

different target, but coordination was the linchpin. Staffs should be collocated to facilitate planning and common understanding.[80] Both of Montgomery's Royal Air Force subordinates, Air Vice Marshalls Tedder and Coningham, amplified the General's remarks. Coningham boiled it down to "The Soldier commands the land forces, the Airman commands the air forces, both commanders work together and operate their respective forces in accordance with the combined Army - Air plan, the whole operation being directed by the Army Commander."[81] These conceptions got the Allies past air power umbrellas and penny packets, but air and ground leadership changes, directed by Eisenhower, were also important factors. For air, he required that senior commanders have a deputy from the opposite Allied nation.[82] For ground, Eisenhower replaced Fredendall with George Patton, who after the Kasserine Pass debacle "aroused the fighting spirit of US troops."[83]

The official USAAF history states, "if these principles owed much to the tutelage of the RAF . . . they at the same time represented a doctrinal emphasis for which the AAF long had struggled . . . Arnold saw to it that the new doctrine [what became *FM 100-20*] went 'full ball' through the War Department." [84] Thus, at first glance it would appear that a poor chapter in inter-service relations between the US Army and USAAF had ended. In fact, it was only a new chapter in the services' continuing friction with the signing of *FM 100-20, The Command and Employment of Air Power*. The US Army immediately perceived "with dismay" that this new 21 July 1943 doctrine was the USAAFs' "declaration of independence."[85] Again, the official Army ground forces post-war history pulls no punches. "The gap between them [USA and USAAF] had been widened by various developments, notably the failure of the air-ground training effort of the Army ground forces in 1942, the reaction of ground commanders to the deficiencies of air reconnaissance and direct support in Africa and Sicily, the declaration of FM 100-20, the

[80] Syrett, "The Tunisian Campaign, 1942-43," *Case Studies in the Development of Close Air Support,* 172. This issue still resonates with calls from certain circles in the Army and Marines to have more USAF staff presence within specific theaters, over and above presence in the more distant CAOC.
[81] Syrett, "The Tunisian Campaign, 1942-43," *Case Studies in the Development of Close Air Support,* ed. B. Franklin Cooling, 173-174.
[82] Hughes, *Over Lord,* 90.
[83] Murray and Millett, *A War to Be Won,* 300. The "with dismay" quote is from Hallion, *Strike from the Sky,* 173.
[84] Craven and Cate, ed., *The Army Air Forces in World War II, Vol. II,* 205.
[85] War Department. *Field Manual 100-20, Command and Employment of Air Power*. Washington DC: US Government Printing Office, 1944. The "declaration of independence" quote is in Hallion, *Strike from the Sky,* 173.

reorganization of the Army Air Forces, the concentration of the Air Forces on high performance equipment, and its attempts to recapture organic field artillery air observation."[86]

The full implications and ramifications of *FM 100-20* are beyond the scope of this thesis. However, the seam between the US Army and the USAAF, begun in the interwar period and then codified in this doctrine, in some measure remains and deserves attention. Clearly, there were cognitive challenges on both sides of the Army - USAAF team that stretch back into the interwar period. Professor Robert Jervis warns, "we ignore information that does not fit, twist it so that it confirms, or at least does not contradict, our beliefs, and deny its validity." Later in the same chapter of his influential *Perceptions and Misperceptions in International Politics*, Jervis goes on, "people frequently fail to realize that evidence that is consistent with their hypothesis may also be consistent with other views."[87] *FM 100-20* simply confirmed each side in its perception of the other, and impeded air-ground synergy.

Two unfortunate circumstances arose in US Army ground force circles, in this regard. First was their perception of the underhanded method in which *FM 100-20* was certified. "In retrospect, it is certainly easy to see why *FM 100-20* was controversial . . . it had been adopted by the War Department without the consultation or approval of Lieutenant General Lesley J. McNair, the commander of Army Ground Forces and the organization coequal of AAF chief Hap Arnold."[88] Second was the tragic irony of General McNair's death. McNair, a man who "was openly hostile to the concept of an independent air force and struggled vainly to convince the airmen to take air-ground training seriously" died in an air strike gone awry.[89] Hushed up in the media at the time, the details of the incident are a chilling reminder of the need to synergize air and ground forces.

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[86] Greenfield, *Army Ground Forces and the Air-Ground Battle Team*, 69.

[87] Robert Jervis, *Perceptions and Misperceptions in International Politics*, (Princeton, NJ: Princeton University Press, 1976), 143 and 181. See also, Hallion, *Strike from the Sky*, 200. Hallion makes mention of the USAAF's potential bias against "Armored Column Cover" post war.

[88] Hallion, *Strike from the Sky*, 174.

[89] Muller, "Close Air Support" *Military Innovation in the Interwar Period*, ed. by Murray and Millett, 185. The "hushed up in the media" reference and the Army ground force perspective comments are drawn from a conversation the author had with Dr. Richard Muller on 17-18 May 2011.

> Air commanders agreed but refused his [General Bradley's] request that the bombers make their runs parallel to the front. Instead, attacking bombers flew perpendicular to US lines. The results were predicable to everyone but the airmen. Bad weather precipitated a cancellation on 24 July, but a number of aircraft dropped anyway, with many bombs falling short onto US troops; 25 Americans died, and a further 131 were wounded. The next day dawned clear; the raids swept in with 1,000 bombers and fighter-bombers blasting German positions. Only the more accurate fighter-bombers were to hit German positions on the front line, but another error by the B-17s resulted in a heavy bombardment of American positions. This time 111 American soldiers, including Lieutenant General Leslie McNair died; another 490 soldiers were wounded."[90]

US Air Power Rising to Victory in North Africa

As the US military began to feel the effects of its war economy's mobilization in 1943, the tide changed for their fortunes on the battlefield. The USAAF certainly was a beneficiary of this surge, as it grew in size and proficiency. One lens to view the USAAF's surge in North Africa is logistics. "When the Allies landed in Northwest Africa, they captured only five all-weather airfields. By the end of the campaign in Tunisia, however, 9,000 AAF engineers had constructed more than 100 additional airstrips."[91] In North Africa, this increase happened in less than six months. By the end of the campaign, the USAAF was able to engage Axis air forces with superior aircraft such as the Lockheed P-38 *Lightning* joining the less capable Curtiss P-40 *Warhawk* and the inferior Bell P-39 *Airacobra*.[92]

Eisenhower became a proven leader, and unlike the Axis force team of the Germans and Italians, the Allies began close teamwork in North Africa that would carry them to victory in May 1945. This included a new focus on air to ground coordination, as their air power strength allowed them to look beyond their first and second priorities. They began to realize "the importance of harmonious personal relations, common sense,

[90] Murray and Millett, *A War to Be Won*, 429.
[91] Syrett, "The Tunisian Campaign, 1942-43," *Case Studies in the Development of Close Air Support*, ed. B. Franklin Cooling, 161.
[92] Craven and Cate, ed., *The Army Air Forces in World War II, Vol. II*, 186 and 192.

and good will among British and American leaders in achieving air-ground cooperation and effectiveness."[93]

Overall, aviation historian David Syrett reviews the campaign as being a transition period toward full flower in Normandy. "By mid-April 1943, Allied air forces were superior in the Mediterranean, for they had more, if not necessarily better, aircraft, and their aircrews were improving daily. . . While allied air power in the Mediterranean cannot be compared with the massive numbers used over Northwest Europe a year later, the 1943 operations were unprecedented in size and scope."[94]

British Example of Integrated CAS with *Rover* System in Italy

This thesis is headed to Normandy to recount the incredible air-ground synergy facilitated by General Quesada, but mention must be made regarding the British innovation of integrated CAS utilizing FACs. Begun in North Africa in tentative fashion, in Italy the British "*Rover"* system matured to the point that it was emulated by the Americans. The USAAF came around to this system, as after combat in North Africa, air-ground coordination problems still troubled the invasion of Sicily. Soon Lieutenant General Mark Clark USA, the commander of the US Fifth Army, who was frustrated and unimpressed with air support, formally complained to his superior, Field Marshal Alexander.[95] This proved just the first time General Clark took issue with air support, as chapter 4 will show. "His [General Clark's] complaint resulted in the maximum Allied air effort of September 14-15, which greatly assisted in turning back the German thrust. Later in September and into October, still further improvement in cooperation became apparent. Centralized control of air assets, close liaison between armies and tactical air commands, and daily meetings of air and ground leaders to choose targets for the following day, all contributed to increased efficiency. There were also experiments with forward air controllers operating from jeeps and other vehicles."[96]

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[93] Syrett, "The Tunisian Campaign, 1942-43," *Case Studies in the Development of Close Air Support,* ed. B. Franklin Cooling, 177.
[94] Syrett, "The Tunisian Campaign, 1942-43," *Case Studies in the Development of Close Air Support,* ed. B. Franklin Cooling, 181.
[95] Alan F. Wilt, "Allied Cooperation in Sicily and Italy 1943-1945," *Case Studies in the Development of Close Air Support,* ed. B. Franklin Cooling,199-203.
[96] Alan F. Wilt, "Allied Cooperation in Sicily and Italy 1943-1945," *Case Studies in the Development of Close Air Support,* ed. B. Franklin Cooling,199-203.

In September and October 1943, the USAAF began experiments with a system parallel to the US Marine's ALPs, used experimentally on New Georgia at precisely the same time, half a world away. In the modern world of information and technology, it baffles the mind that this influential tactical knowledge did not spread throughout the US military. But just like in the Pacific theater, the exigencies of heavy combat brought integrated CAS to fruition. These pressures also brought about the first airborne coordination of CAS in Italy at this time in what the Americans called *Pineapple*, again parallel at approximately the same time as the Marine Corps began these tactics in the Pacific with what they termed the *Grasshopper* aircraft.[97]

As late as January 1944, the US Army – USAAF team was finally setting up its Air Liaison Officer (ALO) program. These billets remain with the modern force as a key link between soldiers and airmen, but the job entails "ambassador" like qualities and is distinct from the role of the forward air controller (FAC).

When reviewing the overall history of USAAF air-ground capability from 1918-1943, one is taken with the twists and turns of its development. As the US Army - USAAF team prepared for larger scale operations in Europe "two related factors, then, led to an alteration of the air force's position on CAS . . . [they were] the dismal performance of its units in Tunisia and . . . British methods, wearing the authority of success."[98]

Operation Overlord: Integrated CAS Achieved with "Armored Column Cover"

> *...this man Quesada is a jewel . . .unlike most airmen who viewed ground support as a bothersome diversion to war in the sky. Quesada approached it as a vast new frontier waiting to be explored.*
>
> *-- General Omar Bradley, Commander 1st US Army, Normandy - 1944*

Integrated CAS Pioneer - Major General "Pete" Quesada USAAF

Elwood R. "Pete" Quesada was born in 1904, the son of a Spanish businessman and an Irish-American mother who raised the family "in a very Catholic background" in

[97] Alan F. Wilt, "Allied Cooperation in Sicily and Italy 1943-1945," *Case Studies in the Development of Close Air Support*, ed. B. Franklin Cooling, 218.
[98] Muller, "Close Air Support" *Military Innovation in the Interwar Period*, ed. by Murray and Millett, 186.

Washington, DC.[99] Quesada was commissioned in 1927 into the US Army Air Service and was first assigned to Bolling Field where he served with then-Major Carl Spaatz and then-Captain Ira Eaker. Quesada next served as a flying aide to the Chief of the Air Corps, Major General James E. Fechet.[100] Through the 1920s and 1930s his career steadily progressed through various aide and attaché billets. In 1934 First Lieutenant Quesada attended the ACTS.[101] As mentioned above, in these years ACTS was fervently bore-sighted on strategic bombardment to the exclusion of other air power roles. Quesada recalled ACTS was "oriented toward strategic bombardment while I was there, I thought it was overstated then, but it didn't result to me getting in any debate at Maxwell. I did not become a jealous advocate of it either way." Years later General Bradley recalled Quesada as a "brilliant . . . young and imaginative man unencumbered by the prejudices and theories of so many of his seniors on the employment of tactical air."[102] After ACTS, Quesada attended and graduated from the Army's selective Command and General Staff School at Fort Leavenworth, Kansas. [103]

Promoted to Major in 1941, Quesada's first command was the 33d Pursuit Group that flew the Curtiss P-40 *Warhawk* at Mitchell Field, Long Island. A year later, in December 1942 Quesada deployed to North Africa where he assumed command of XII Fighter Command and would "work out the mechanics of close air support and Army-Air Forces cooperation."[104]

General Quesada Assumes Command of IX TAC

Benefiting from rapid war-time promotions, in the fall of 1943, now-Brigadier General Quesada departed North Africa with orders to England. He assumed command of the IX Tactical Air Command (TAC) for service in the forthcoming Normandy invasion, telling a senior USAAF leader that assigned him he was "looking forward to the job that you said would be mine with great anticipation and enthusiasm."[105] It is worth note that during this period of the build-up in England, as the US Army trained in the

[99] Quesada, Oral Interview, May 12, 1975, 1.
[100] Official USAF Biography for LtGen Quesada: http://www.af.mil/information/bios/bio.asp?bioID=6575
[101] Finney, *History of the Air Corps Tactical School,* 49.
[102] Hughes, *Over Lord,* 184.
[103] Hughes, *Over Lord,* 58.
[104] Official USAF Biography for LtGen Quesada: http://www.af.mil/information/bios/bio.asp?bioID=6575
[105] Hughes, *Over Lord,* 108.

pastoral countryside of southern England, the USAAF was flying and fighting over the continent. General Quesada remembers, "There was very little joint training. Now that was almost as impossible from the Army point of view as from ours. . . between these people moving to England and the invasion, the air forces were fighting, whereas the ground forces weren't. I don't say this in any derogatory sense, but the fact remains that our tactical air forces were just as much in the battle over Germany as the fighters of the IX Bomber Command."[106]

At the highest echelons of air power, many of the so-called bomber barons serving Britain and the US "had been proclaiming for months that they considered OVERLORD a vast, gratuitous strategic misjudgement, rendered wholly unnecessary by their own operations."[107] This myopia combined with senior air leadership shuffling even prevented coordination, let alone training between the air-ground team. This seems incredulous in hindsight, but historian Max Hastings paints a vivid picture. "In the spring of 1944, the air chiefs dedicated far too much attention to disputes about their own authority and independence, and not nearly enough to considering how best to work in harmony with the armies beneath them. The post-OVERLORD report from Montgomery's headquarters declared: 'The most difficult single factor during the period of planning from the military point of view, was the delay in deciding and setting up the higher headquarters organization for the Allied air force.' . . . the D-Day air plan was finally set up only 36 hours before the landings took place."[108] These facts appear preposterous in hindsight, but once again reveal the vital importance of inter-personal relations for successful combat operations, especially among senior leaders. In many instances, solid relationships, mutual appreciation, and selflessness proved more important that codified military doctrine.

As D-Day approached, even open-minded USAAF leaders like General Quesada did not appreciate how much they could contribute as an air-ground team. "Generally speaking, the Air Force was unaware of how much they could do in that area [air strikes in support of the Army]. The Air Force generally thought that they were ineffective in that area, that their arm was not the best arm to use when the ground forces were in close

[106] Quesada, Oral Interview, May 12, 1975, 16.
[107] Max Hastings, *Overlord D-Day and the Battle for Normandy*, (New York, NY: Vintage Books, 1984), 40.
[108] Hastings, *Overlord*, 45.

and bitter contact with the enemy."[109] The General also relayed what the USAAF thought of air-ground coordination pre-D-Day, but his insightful statement points to his own clear-headed approach. "There was an attitude that went all through the Air Force that I adopted, my juniors adopted and my seniors adopted, that this [CAS] was not our mission. It was not our mission to participate that close in battle. However, after a matter of just days it was just obvious that there was a lot that we could do, and [General] Bradley helped me realize that."[110]

Quesada did put a premium on interpersonal relations with his peers, if not his subordinates. Historian Thomas Hughes relates "in order to build stronger links with ground commanders, Quesada invited [Major General] Gerhardt to spend a night at Middle Wallop in February. . . when Gerhardt left the next morning, he thanked his host for the 'most interesting talk I have yet had with a pilot on the subject of air support.'"[111] Gerhardt relays in his memoirs that in heavy combat during the breakout from Normandy, his 29th Division benefited from "coordination between the air and ground, and [it] was of great benefit to us."[112]

The USAAF squadrons preparing for combat in Normandy were not privy to the *Rover* and *Pineapple* air-ground tactical innovations then under development in Italy. There is little evidence to suggest lessons learned were transmitted between the theaters. If CAS lessons were, FACs would have been with the lead elements of the army's assault divisions hitting the beach at Normandy, but alas, they were not. Military historians Williamson Murray and Alan R. Millett are highly critical of Operation Overlord leaders in their failure to acquire lessons learned from the Pacific, stating, "None of the senior U.S. commanders, including Eisenhower and Bradley, displayed the slightest interest in learning anything about [lessons learned from the Pacific]. In fact, the prevailing attitude was that 'anything that happened in the Pacific was bush league stuff' of no use to those planning operations in the European Theater."[113]

[109] Quesada, Oral Interview, May 12, 1975, 15.
[110] Quesada, Oral Interview, May 12, 1975, 34.
[111] Hughes, *Over Lord*, 120.
[112] The Charles Hunter Gerhardt Papers, US Army Historical Education Center – Military History Institute, Carlisle Barracks, PA, page 46.
[113] Murray and Millett, *A War to Be Won*, 419.

One exception was that four days before the Normandy landings, General Quesada received a memo from a contemporary serving in Italy, Major General John Cannon, USAAF. Cannon relayed a cautionary tale about an over-reliance on interdiction, but did not mention forward air controllers or the British *Rover* system. Cannon wrote, "Air power alone cannot defeat a highly organized and disciplined Army, even when that Army is virtually without air support of its own. It cannot by itself force a withdrawal by drying up the flow of command supplies . . . it cannot absolutely isolate the battle field from enemy supply or reinforcement. It cannot absolutely guarantee the immunity either of our forward formation or back areas."[114]

In preparation for the D-Day landings, Allied air leaders unleashed the "transportation plan" that included strategic bombers. The heavy bombers' first mission priority was "to deplete the German air force and particularly the German fighter forces and to destroy and disorganize the facilities supporting them' and secondly to 'destroy and disrupt the enemy's rail communications, particularly those affecting the enemy's movement toward the Overlord lodgment area.'"[115] The official USAAF history relates, "By the end of April it was evident that enormous damage was being done. Some 33,000 tons had fallen on the rail centers . . . during May 1944, the month of the heaviest pre-invasion bombing, transportation attacks were greatly intensified by all air forces and cunningly focused on routes which led into Normandy while seemingly concentrated on those serving other areas."[116] Beginning on 8 April, IX TAC was in the thick of this interdiction and many presumed this would remain their primary role. "Quesada and most planners believed that interdiction efforts would dominate early air operations in France. CAS they thought would develop only after the Allies had a firm beachhead some 30 miles deep." On the eve of the invasion, General Quesada's IX TAC consisted of 1,600 P-47 *Thunderbolts*, P-51 *Mustangs*, P-38 *Lightings* and 35,000 airmen.[117]

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[114] Hughes, *Over Lord*, 139.
[115] Richard J. Overy, *The Air War, 1939-1945*, (Washington, DC: Potomac Books, 1980), 75.
[116] Craven and Cate, ed., *The Army Air Forces in World War II, Vol. III Europe: Argument to V-E Day, January 1944 to May 1945,* (Washington, DC: Office of Air Force History, 1951), 153-154.
[117] Hughes, *Over Lord*, 114.

D-Day at Normandy - 6 June 1944

As the assault elements of the US 1st and 29th Infantry Divisions stormed ashore on Omaha Beach on June 6, 1944 there was no way for them to receive integrated CAS. The air-plan only allocated 47 urgent-request missions, as the vast preponderance of tactical air power focused on pre-planned shore targets or interdiction targets further inland.[118] Although effective, there was a limit to both the transportation plan, and at a lower level the tactical isolation of the beachheads. Historian Max Hastings captures a specific example. "It remains one of the minor mysteries of D-Day that throughout their long drive up the road to the battlefield that morning, even after the lifting of the cloud that hampered air operations for part of the morning, 21st Panzer suffered little material damage from Allied fighter bombers."[119]

As this thesis has covered in detail, prior to integrated CAS's fruition, the state of the art for air support had been for requesting infantry units to pass air support requests up their chain of command. In many cases these requests had to pass up through army corps level for approval, then across to air arm channels for approval and what in modern parlance is termed "apportionment." This plan for Normandy paralleled the slow systems in place throughout the Pacific campaigns until the ASP system flowered and Lieutenant Colonel McCutcheon provided the impetus for integrated CAS. The "tedious" air support request system required as much as 60 minutes to process, time that must have seemed a lifetime to infantry in contact with seasoned Germans.[120] "The American Air Support Parties landing [on Normady] with each of the Regimental Combat Teams did have VHF radios, but they were enjoined from contacting aircraft overhead unless specifically authorized to do so. Nor were they allowed to intervene in stopping attacks on friendly troops or the wrong targets."[121]

The Omaha landings were hotly contested by the enemy and were tenuous for nearly six hours. The travails of the landing force at Omaha would have been recognizable to any veteran of other bloody beaches, such as Tarawa or Gallipoli. The lack of artillery accompanying the landing force and the need for close in naval

[118] Hughes, *Over Lord*, 132.
[119] Hastings, *Overlord*, 112.
[120] Hughes, *Over Lord*, 183.
[121] W.A. Jacobs, "The Battle for France, 1944", *Case Studies in the Development of Close Air Support*, ed. B. Franklin Cooling, 254.

bombardment and air in the interim, (until the guns could be brought ashore and laid in place) is common to all amphibious assaults. But at Omaha age old amphibious assault challenges were compounded by a circumscribed air and naval bombardment that lasted only a brief 40 minutes. Moreover, steep bluffs as high as 200 feet dominated the landing beaches and the veteran German 352 Infantry Division had been there for three months training and preparing for combat. When the first Higgins boats ramps dropped, it was "nearly a disaster."[122]

General Bradley relays the situation on Omaha in his autobiography *A Soldier's Story*, "When V Corps reported at noon [five and a half hours post H-Hour] that the situation was 'still critical' on all four beach exits, I reluctantly contemplated the diversion of Omaha follow-up forces to Utah and the British beaches." There was some dedicated air support on D-Day, but the lack of forward air controllers, and quick, responsive, (and to use Montgomery's descriptor) "flexible" air support the infantry had a tougher time than they might have. "On D-Day itself, while the Allied tactical air forces made an important contribution, they lacked forward air controllers with the leading troops ashore, who might have eased the problems of the ground battle considerably. It has become an article of faith in the history of the Normandy campaign to pay tribute to Allied air power, which indeed was critical. Yet we shall see below how many weeks elapsed before the organization – not the technology or the skill of the pilots – reached the point at which aircraft could render closely coordinated support to ground troops."[123]

In the first week after the landings, US Army ground forces made 184 requests for CAS, and more and more leaders were beginning to see how vital a contribution the fighter-bombers could make. General Quesada told his group commanders, 'The fighter bomber boys are doing more to make this campaign a success than anyone ever anticipated.'"[124] The latter portion of his sentence is due in large part to the cognitive focus of his service throughout the interwar years.[125] It is to Quesada's great and enduring credit that he had the vision to see his air power in a new light and to act and lead in the superior manner that he did.

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[122] Carlo D'Este, *Decision in Normandy*, (London, UK: William Collins Sons and Co. Ltd., 1983), 113-114.
[123] Hastings, *Overlord*, 45.
[124] Hughes, *Over Lord*, 149.
[125] Jervis, *Perceptions and Misperceptions in International Politics*. Jervis covers cognition and pre-conceived ideas in great depth.

The Birth of "Armored Column Cover" - USAAF Integrated CAS Achieved

The landings in Normandy were simply the beginning of many months of fierce combat with the tenacious German veterans, who soon became masters at using the unique French *bocage* country to their defensive benefit. How could the infantry to breakout of the restrictive *bocage* country to utilize the mobility of their tanks and vehicle? What could be of great help for such a breakout? Luckily for the infantry, General Quesada kept an open mind, and cultivated a great relationship with General Bradley. On D+1, Quesada flew a P-38 to Normandy and established his headquarters right next the 1st Army HQ.[126] In his 1975 interview he spoke at length of the birth of integrated CAS and the "light bulb" moment he had with General Bradley. The Breakout at St. Lo occurred on 25 July, 1944.

> "The idea of having airmen with ground units so they could talk to airmen in airmen's terms occurred just before the breakout at St. Lo . . . I was urging him [General Bradley] on the other hand to concentrate [his armor], and I said 'Look, Brad, if you will concentrate your armor, I will tell you what I will do. I will keep over every column that you establish a flight of bombers from daylight until dark.' He said, 'You will?' 'Yes I will.' He said, 'For every column I establish?' 'Yes, and further than that, Brad, we'll do something else that I think will be a tremendous help. We will put in the lead tank of every column and aircraft radio, and it is so they can talk to the flight that is above them, which will be there from dawn to dusk.' 'Terrific. You'll do that? Can you do it?' 'Yes.' And I said, 'furthermore, in order for that talk to be meaningful to the pilot, I'll put an aviator in the tank.' Because the point is that if the armor guy who knows how to fight a tank is talking to the airplane, he's not going to talk to the guy in the airplane in terms that are meaningful to him. The guy in the tank will say, 'see that tree over there?' Well hell, (Laughter) this is literally true, to him that tree is everything. But to the guy in the airplane he sees a hundred thousand trees, so you got to get somebody in the tank talking to the boy in the airplane that will talk in meaningful terms.'"[127]

General Bradley's account alters the "light bulb" moment in that he takes credit for putting the air support parties in the tanks. "General Bradley: 'Well, why not put your air-support parties in tanks?' General Quesada: 'Do you mean it, General?' he said. 'By golly, that would do it!'"[128] There is also humor on the following pages in *A Soldier's*

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[126] Hastings, *Overlord,* 271.
[127] Quesada, Oral Interview, May 12, 1975, 35-37.
[128] General of the Army Omar N. Bradley, *A Soldier's Story*, (New York, NY: Henry Holt and Co., 1951), 337.

Story regarding the confusion engendered by Bradley ordering two tanks to go to IX TAC. More than these specifics, the immense tactical capability unleashed by the integrated CAS breakthrough reflects precisely on the German and Marine Corps case studies presented in this thesis.

From General Quesada's perspective, an officer who had served as an aviator for nearly twenty years, this was truly integrative thinking. To perceive the ground and air roles and then to fuse them in this way, especially in light of the Army Air Corps' institutional focus in the interwar period, is outstanding. Many of Quesada's less capable contemporaries viewed air and ground forces with divergent and narrowly constricted lenses, if not in a diametrically opposed view. Many would continue to do so long after the guns of World War II fell silent, and in some respects there are those who still feel the USAF has an institutional aversion to close coordination with the Army.[129] Evaluating these opposable (ground and air) views and synergizing them is the essence of Roger Martin's *integrative* thinking.[130]

Historian Thomas Hughes quotes a key Quesada subordinate, Colonel Blair Garland, USAAF, who captured these opposing institutional views after the war. "These were two separate and distinct organizations – the Air Corps and the Army." Hughes goes on, "For most airmen, any attempt to tighten communications between front line pilots and soldiers carried with it the ominous potential for ground commanders to control airplanes. But for Quesada, the clear experience of battle demanded such a setup."[131] General Quesada's ability to view the totality of the circumstances of combat and to sympathize with the GIs in the foxhole, displays yet again how valuable a leader he was to the US effort, not just during the Normandy break out, but to US military history. He is the US innovator of integrated CAS, achieved six month prior to the Marines on Luzon. He still dealt with challenges from his institution, the USAAF, but his focus was clear. "At times I was subjected to some well, for lack of a better term, ridicule, for using the airpower for this purpose. My answer was, this is where the fighting is. The fact remains that the infantry is fighting. The fact remains that the

[129] There are many references: this one is from the official USAF history of CAS. B. Franklin Cooling, "Introduction," *Case Studies in the Development of Close Air Support,* ed. B. Franklin Cooling, 11.
[130] Martin, *The Opposable Mind,* 6.
[131] Hughes, *Over Lord,* 184.

infantry is having trouble, and the fact remains that the results are proven. This does help them in their role, and that is what I am here for. I'm willing to do almost anything to help them. I'm not willing to waste lives and use airpower in an ineffective way, but this is effective."[132] Historian Max Hastings is unsparing in his praise for Quesada's CAS innovations. "Few airmen of any nationality went to such lengths to keep in touch with the realities of the ground battle."[133]

Soon the lethality of "Armored Column Cover" had the Germans reeling. The following exchange exemplifies the air-ground team: "'Is the road safe for us to proceed?' was the question radioed on one occasion from tank to plane. 'Stand by and we'll find out,' came the answer, and in the ensuing sweep the four P-47s spotted many enemy tanks on the road ahead and put them out of action. Returning to the air over their column, the planes radioed: 'All clear. Proceed at will.'"[134]

One of the primary reasons for this incredible air-ground synergy and lethality was the institution of Forward Air Controllers. Although in most cases aviators admit they enjoy flying more, the experience of being a FAC can prove to be incredibly rewarding. This was just as true in heavy combat in World War II as it has proven in subsequent conflicts. During the Operation Cobra breakout, a young USAAF Lieutenant Joe "Noodles" Nolan exemplified this. "Perhaps better than most, Nolan came to appreciate the direct and intangible benefits of armored-column cover. Although he preferred flying, service in a tank offered him a new perspective of the war. 'Now I know what it is like down there,' he said after returning to flying in September. 'If they ask me to strafe right in front of them and if they ask me to get a gun I'll know what it means. That goes for the tanks and the infantry and the others up at the front. There're full of guts and loaded with spirit.'"[135]

Lastly, from the enemy's perspective, the specter of tactical fighter bombers that were obviously working in conjunction with the enemy ground forces rolling toward your position was incredibly intense, and no doubt the last awe-struck thought in the mind of many Germans before meeting their death. The German 2nd Panzer Division report in

[132] Quesada, Oral Interview, May 22, 1975, 14.
[133] Hastings, *Overlord*, 273.
[134] Craven and Cate, ed., *The Army Air Forces in World War II, Vol. III*, 240.
[135] Hughes, *Over Lord*, 239.

July 1944 reflects this precisely. "The feeling of helplessness against enemy aircraft operating without hindrance has a paralyzing effect; and during the barrage the effect on the inexperienced men is literally soul shattering."[136]

General Quesada's Impact on the US Army Drive Across Europe

This thesis's first quote below the introduction was from General George S. Patton's *War as I Knew It*. *"For about two miles the road was full of enemy motor transport and armor, many of which bore the unmistakable calling card of the P-47 fighter-bomber . . .*" relayed the pinnacle of air-ground teamwork that his tanks and Brigadier General O.P. Weyland's P-47s.[137] Major General Quesada was the key innovator of the tactics that General Weyland and many others have subsequently used to great effect. Quesada deserves the high praise reserved only for innovators, as he opened new chapters in US air-ground teamwork and combat lethality.

Understanding the history of CAS development, it should not come as a surprise that not all in the USAAF were so enthusiastic about air-ground synergy. One would presume some of the criticism of innovative tactics would have waited until the calm of the post war period, but sure enough, even General Quesada's superior, Major General Vandenberg, was critical of such employment of air assets. This was not the last time Vandenberg attempted to hinder the US air-ground teamwork, as we shall see in Korea. "Vandenberg felt that artillery, not planes, should handle targets so close to the front lines. In a memo to Brereton on the 29th he criticized Quesada for the 'malemployment' of air assets. 'Too much of the force available to the commander IX TAC, was being employed within an area of 30-40 miles in advance of the army's front line.' The complaint revealed an astonishing ignorance of the battle."[138]

General Quesada knew the accomplishments of his pilots' brave service both in the air and on the ground. It is noteworthy that in October 1944, General Eisenhower invited Major General Quesada to join his 13 US Army Commanding Generals for a picture. He was the only USAAF officer to be so invited. General Bradley sure knew why. "This 40-year old airman helped more than anyone else to develop the air-ground

[136] Hastings, *Overlord*, 182.
[137] George S. Patton Jr., *War as I Knew It*, (New York, NY: Houghton Mifflin, 1979), 84.
[138] Hughes, *Over Lord*, 225.

support that was to speed us so successfully across France on the heels of the breakout. He succeeded brilliantly in a task where so many airmen before him had failed, partly because he was willing to dare anything once. Unlike most airmen who viewed ground support as a bothersome diversion to the war in the sky, Quesada approached it as a vast new frontier to be explored."[139]

Conclusion

Although with seemingly the furthest to go to achieve integrated CAS in the dark days of combat in North Africa, the USAAF achieved the tactic by Normandy, and gave their Army brethren an incredible assist in their unrelenting drive across Europe. The combat veterans of IX and XIX TAC knew they had provided the air half of phenomenal air-ground team. Soon after the war, however, the newly independent US Air Force again disregarded the lessons first learned outside St. Lo. This trend continued after the war, even as the US emerged as a world superpower.

One of the finest strategists of the new nuclear age captured this sentiment in 1959 when Robert Brodie wrote, "It was in tactical employment that success was most spectacular and that the air forces won the unqualified respect and admiration of the older services."[140] This cycle of the tactical air power's diminution would recur yet again.

[139] Bradley, *A Soldier's Story,* 250.
[140] Bernard Brodie, *Strategy in the Missile Age*. Santa Monica, CA: Rand Corporation, 2007 {of the 1959 original}, 107.

Chapter 4

The Proficiency and Prioritization Issues Related to the Korean CAS Controversy (1950-1951)

> *Every air force has learnt some faulty lessons from historical experience and has neglected to note lessons of enduring merit. Examples abound. Most clearly of all perhaps, the U.S. Army Air Forces (USAAF) and then the U.S. Air Force were obliged to rediscover the feasibility and importance of close air support (from the lessons of 1918) no fewer than three times (1941-45, 1950-53, 1965-72).*
>
> --Colin S. Gray

Chapter Introduction

As North Korean forces streamed south in June 1950 during their opening gambit of the Korean Conflict, US forces were initially unprepared for a conventional land war in Asia. This chapter uses the two lenses of CAS proficiency and prioritization during the first six months of the conflict to view what came to be known as the Korean CAS controversy. Some of the fault lines between the USAF and the USMC/USN's conduct of CAS reflected differing service roles and missions. Many of the CAS issues that began to grab headlines during this era have been addressed in the Goldwater – Nichols legislation of 1986, but there are lessons to be gleaned from an investigation into the history.

US Air Force Service Independence and the Reduction of Tactical Air Command

The USAF achieved its long-sought service independence in September 1947. Due to various pressures and priorities at the dawn of the nuclear age, the new service quickly focused on retaining their lead role in the newly created Defense Department. At the time, the USAF was the only service that could deliver the vaunted nuclear weapons, and when the government adopted an atomic defensive posture, airmen found themselves in the catbirds seat within the DOD. As fiscal challenges loomed, new USAF Chief of Staff General Hoyt Vandenberg "directed his staff to reevaluate close air support owing

to budgetary pressures necessitating economy measures" and in December 1948, "decided to downgrade TAC."[1] Unsurprisingly, newly promoted Lieutenant General Quesada was "disillusioned."[2] With the lion's share of USAF budgets going to General Curtis Lemay's Strategic Air Command, TAC dwindled to a 150-man headquarters. General Quesada refused to be a "conspirator in an ugly mistake" and retired.[3] The US Army was concerned as well and saw these machinations as violations of promises made in the run-up to USAF service independence. "As a condition of this new autonomy, Tooey Spaatz promised Army Chief of Staff Dwight Eisenhower a firm commitment to tactical aviation."[4] An April 1949 US Army study concluded, "the United States had no tactical air force 'worthy of the name.'"[5]

1949 - The Cold War Deepens and the "Revolt of the Admirals"

The pressures on all the armed forces of this era were many and varied. In 1949, the Soviet Union's acquisition of an atomic weapon came sooner than expected.[6] This overarching threat combined with the loss of both China and Czechoslovakia to communism, the hardening of the ideological fault lines in Europe, and the US's economic commitment to the Marshall Plan. These pressures and tighter defense budgets caused major inter-service friction. Although the USAF took justified pride in the Berlin Airlift, their leaders maintained and in some measure increased their tunnel vision regarding real and perceived threats.

"The Revolt of the Admirals" was a showdown between the US Navy and the USAF in 1949. A Department of Defense (DOD) campaign to meld the military services together increased the pressure on the services during this era.[7] The complex showdown

[1] Philip S. Meilinger, *Hoyt S. Vandenberg, The Life of a General*, (Bloomington, IN: Indiana University Press, 1989), 167.
[2] Thomas Alexander Hughes, *Over Lord: General Pete Quesada and the Triumph of Tactical Air Power in World War II*, New York, NY: The Free Press, 1995), 312.
[3] Hughes, *Over Lord*, 312.
[4] Hughes, *Over Lord*, 311.
[5] Meilinger, *Hoyt S. Vandenberg*, 168.
[6] Jeffrey G. Barlow, *Revolt of the Admirals, The Fight for Naval Aviation, 1945-1950*, (Washington, DC: Ross and Perry Inc., 2001), 233.
[7] Barlow, *Revolt of the Admirals*, 25-26.

concerned myopic flag officers and senior DOD civilians interested more in Model II institutional interests, of their respective military branches, than national defense.[8]

The reductionist logic of strategic air power coupled with the USAF receiving the largest share of DOD funding also proved to be a major source of inter-service friction.

The showdown centered on the acquisition of the *USS United States* flush deck aircraft carrier and the Convair B-36 *Peacemaker* long range bomber. Admiral Radford attacked the theory of strategic bombing. He undermined the USAF's shallow logic that atomic bombers were stand-alone war winners in hearings before the House Armed Services Committee. "The type of war we plan to fight must fit the kind of peace we want. We cannot look to the military victory alone, with no thought to the solution of the staggering problems … of an atomic blitz."[9] The Navy lost the flush deck carrier battle in the short term, but the role of naval aviation was ably defended, including the Navy's use of nuclear weapons. Korea proved the flexible utility of the aircraft carrier yet again.

Proficiency Issues with CAS in Korea

The initial role of US forces in Korea was to stem the tide of onrushing North Korean communist forces heading south. Republic of Korea (ROK) and US ground forces consolidated the Pusan perimeter as other UN forces mobilized and deployed to the theater. CAS became an important combat multiplier and soon the differences between the USAF and the USMC delivery of air support became known. Released on 25 December 1950, a US Army Tenth Corps report entitled *Army Tactical Air Support Requirements* highlighted these differences. An official US Army X Corps report entitled, *Army Tactical Air Support Requirements* stated, "Operations in Korea during 1950 have provided an excellent medium for determining Army tactical air support requirements. Both requirements and many indicated means for meeting them have been brought sharply into focus by comparing the tactical air support provided by Fifth Air Force with that of the 1st Marine Air Wing. From the Army standpoint the 1st Marine Air Wing has been superior in every respect, as follows:

[8] Graham Allison and Philip Zelikow, *Essence of Decision, Explaining the Cuban Missile Crisis*, (New York: NY, Addison-Wesley Educational Publishers Inc., 1999), 143.
[9] Barlow, *Revolt of the Admirals*, 247.

Factor	1st MAW Advantage	Fifth AF Disadvantage
(1) Type of A/C	Designed for tactical air support	Designed for fighter missions Primarily
(2) Mission	Tactical Air Support its primary mission	Tactical Air Support not higher than third priority mission
(3) Training	Extensive air-ground training, complete familiarity with and understanding of supported unit tactics, problems and techniques.	Virtually no air-ground training initially, but methods of supporting ground units are now under development.
(4) TACP's	One per Inf Bn and higher unit – 13 per Inf Div.	One per Inf Regt and higher unit – 4 per Inf Div.
(5) Control	Senior ground commander in operational control	Senior Air Force commander in operational control, cooperating with senior Army commander."[10]

X Corps, led by Major General Almond, USA took this as their official view of CAS in the first six months of the conflict. Many of the differences between the CAS delivered by the Air Force and the Marines were due to their airframe, basing, and service perspective.

Initially the USAF flew CAS in Korea with Lockheed F-80 *Shooting Star* jet aircraft. Flown round trip from Japan, the aircraft had minimal on station time over the target area, often ten minutes or less. Fitting the *Shooting Star* with wing tip tanks hardly increased its loiter time and also reduced its ordnance payload. [11] "The commander of FEAF, [Far East Air Force] Maj. Gen. Earle Partridge, would have preferred P-47 *Thunderbolts*, a 'far better strafing and dive bomber airplane,' but none of those were available, either."[12] There were concerns, some validated, that at jet speeds the pilot would not have a chance to build situational awareness in the target area, even when they

[10] Headquarters X Corps, *Army Tactical Air Support Requirements*, 25 December 1950, Almond Papers - Korean War, Tactical Air Support Combat Notes & Enemy Tactics 1951, Box 81, USAHEC - MHI, Carlisle Barracks, PA.
[11] Rear Admiral R. W. Ruble USN, "Naval Air in Korea" lecture #144 delivered to the Naval War College 1 May 1951, US Naval War College Archives. See also Alan R. Millett, "Korea, 1950-1953," *Case Studies in the Development of Close Air Support,* ed. B. Franklin Cooling, 362.
[12] Conrad Crane, *American Airpower Strategy in Korea 1950-1953*, (Lawrence, KS: University Press of Kansas, 2000), 24.

had the fuel to remain on station. This was one reason the USAF began using converted North American T-6 *Texan* trainers in an airborne FAC role. "When jet aircraft, flying at long range from Japanese air bases, had difficulty remaining over the frontlines long enough to identify and attack close-support targets, the Fifth [Air Force] organized a provisional 'Mosquito' airborne controller squadron."[13] Finally, the F-80 *Shooting Stars* were not suited for the rough airfields in Korea that became available as the conflict progressed. Soon FEAF requested and received F-51 *Mustangs* in the air support role.[14]

Although the Navy and Marine Corps aviation's contribution was on a smaller scale overall in comparison with the FEAF, the disparity between CAS proficiency of the services was soon evident. The Navy and Marines flew the Chance Vought F4U-4 *Corsair* and the new Douglas AD-1 *Skyraider*, both of which were capable of carrying large ordnance loads and had the fuel for long flights and on-station times. When the carriers operated off shore in proximity to the ground fighting their greater payloads and loiter times became obvious strengths. "The AD [*Skyraider*] carried something like 2,000 pounds. For instance they'd carry three 500-pound bombs, 12 5-inch rockets, and a lot of machine gun ammunition, 20mm. So of course they were carrying quite a load."[15] F-80s at this time could carry 100 and 260-pound bombs but no napalm tanks.

A major factor in CAS proficiency was the philosophy the respective services had given the tactic and how much training they received in this area. As we have seen, USAF TAC had faded to oblivion in 1948 when the infant USAF focused solely on strategic bombing and air superiority missions. This partly explains their poor CAS showing at the outset of the conflict, but to be fair improvements were undertaken. A major issue was a return to older CAS request procedures. This was a retrograde back to pre-Armored Column Cover CAS request procedures. Yet again US Army infantrymen requesting air strikes had to wait as the request reached as high as corps level, then to the USAF chain for approval and apportionment. CAS request delays in Korea have been

[13] Robert F. Futrell, *Air Operations in the Korean War 1950-1953*, (Maxwell AFB, AL: USAF Historical Division Liaison Office, 1961), 28.
[14] William T. Y'Blood, *Down in the Weeds, Close Air Support in Korea*, (no publishing location, Air Force History and Museums Program, 2002), 14.
[15] Admiral John S. Thatch USN, "Reminiscences of Admiral John S. Thatch USN ret. Vol II" page 537, U.S. Naval Institute, November 1977, Annapolis, MD.

documented. Between July 1950 and January 1951, the *Far East Command Operations Research Officer Report* compared three factors:

1. Average distance from target to friendly troops:

   a. Marines: 1,600 yards (0.9 miles) 45% within 600 yards, 60 % within 1,000 yards
   b. Air Force: 3.82 miles

2. Average time on target

   a. Marines: 73 minutes
   b. Air Force: 30 minutes

3. Average time – request to strike:

   a. Marines: 5-10 minutes
   b. Air Force: 45 minutes[16]

A fundamental difference between the USAF and the USMC was how the services viewed their tactical air control parties (TACP). Some of this dichotomy remains between these services. In Korea, USAF "TACPs showed little skill or interest in their mission, and the Air Force's communications capability appeared good only in comparison with the Army's worst performance."[17] At the outset of the conflict, the USAF had only one trained officer TACP per division.[18] These numbers were increased, but having only one aviator FAC fully versed in aircraft performance and aviator language et cetera to a division, (approximately 20,000 soldiers) was woefully inadequate. Partly due to the air strike inertia in early Korean fighting, and partly due to the USAF's philosophy against ground controllers, the service sent T-6 *Mosquito* airborne FACs into combat. There is a simple shortcoming to this system. The vital bond with the infantry unit, the key to achieving air-ground synergy, degrades or is lost entirely. Modern joint doctrine states FAC (A)s are

[16] The report is entitled *Brief of Far East Command Operations Research Officer Report Preliminary Evaluation of Close Air Support Operations in Korea*, and was prepared through a "joint effort of members of the US Army Operations Research Office, John Hopkins Univ., The Army Research Group, UK, and the Defense Research Board Canada. Published 10 August 1951. Close Air Support Papers, Marine Corps Historical Division, MCB Quantico, VA.
[17] Millett, "Korea, 1950-1953," *Case Studies in the Development of Close Air Support,* ed. B. Franklin Cooling, 349.
[18] Major Michael J. Dolan USA, "What's Right and Wrong with Close Air Support," *United States Army Combat Forces Journal,* July 1951.

"normally an airborne extensions of the tactical air control party."[19] They extend, but do not replace, ground based TACP teams.

At the outset of the Korean Conflict, Marine Corps doctrine at the time initially had one FAC at battalion level (approximately 700-800 Marines) but soon increased this allocation. The Marine Corps has never altered its stance on the importance of aviator FACs being assigned to the infantry unit. A 1951 study entitled Lessons of the Korean War was unequivocal in this regard. "There is no denying that having a pilot on the ground increases a thousandfold the confidence in the controller on the part of the people flying the aircraft and results in the highest degree of accuracy in support. A pilot on the ground is very proud of using his element, is aggressive in applying its use and can visualize the problems of the pilots in the air. He can also give training lectures more intelligently on the capabilities and limitations of close support aircraft and is perhaps capable of greater imagination in applying its use to future developments. There are still many unexploited potentialities of close air support that will come to light in the future, and very probably, progress will hinge upon whether or not the controller is a pilot."[20] These differences in the doctrine of having formally trained FACs with infantry units still stymie the USAF's tie with the US Army. Currently USMC doctrine requires three aviators or naval flight officers to serve as school trained FACs in all infantry battalions.[21] A scan of current USAF doctrine does not require Battalion Air Liaison Officers (BALO) to be officers, but allows "a specifically identified 1C471, TSgt/MSgt … filling a validated deployed BALO position."[22] The dichotomy remains.

In August 1950, during the defense of the Pusan Perimeter the Eighth US Army requested a maximum air effort. "The result was a four week virtuoso performance in close air support that impressed the US 25th Infantry Division and the 5th Regimental Combat

[19] Joint Publication 3-09.3 *Close Air Support*, 8 July 2009.
[20] Unnamed 1st Marine Division Forward Air Controller - Korea, "Inadequacies Noted in the System of Control of Close Air Support Aircraft" distributed by the Commandant of the Marine Corps, dated 17 April 1951. Close Air Support Papers, Marine Corps Historical Division, MCB Quantico, VA.
[21] During the author's tour with 3rd Battalion / 1st Marines service during the 2nd Battle of Fallujah, the author requested and received a reinforcement of another FAC bringing the battalion up to four formally trained FACs for the intense urban combat that was anticipated and conducted.
[22] Air Force Instruction 13-113 incl. ch. 1, *Tactical Air Control Party (TACP) and Air Support Operations Center (ASOC) Training Program*, 15 Nov 2007, page 24.

Team deployed with the Marines along the critical Naktong River line. Marine air strikes arrived quickly and devastated NKPA [North Korean Peoples Army] defensive complexes, mobile formations, and artillery positions. More than half of the Marine sorties came against targets only half a mile from the frontlines. It was the kind of close air support Marines expected, but it came as a revelation to the Army officers who shared the experience."[23]

Navy Captain John S. Thach commanded the escort carrier USS *Sicily*, supporting CAS operations with Marine fighter attack squadron VMF-214 "Blacksheep." The Captain would often listen in on the CAS radio nets from his carrier. Years later he wrote, "it would almost bring tears to your eyes to realize how much these Army troops over there wanted some real good close air support. They hadn't ever had it before. One of them said, 'We had close air support like I've never heard of before. This is something I didn't realize could happen.'"[24] Press coverage of the Marines' air support compared to the USAF's lesser efforts generated the CAS controversy. On 19 August 1950, the *Chicago Daily Tribune* contained an article, "GIVE US FLYING MARINES! CRY FRONTLINE GIs."[25]

Prioritization Issues with CAS in Korea

This thesis has articulated the differing service proclivities of the USMC and USAAF in chapters 2 and 3, but in the first year of the Korea Conflict the differences, some of which are described above, became stark. The USAF prioritized three roles for air power: air superiority, aerial interdiction and close air support. It was in the prioritization between these roles where issues arose. "Friction between ground commanders desiring more close air support and airmen who believed that interdiction or strategic operations would be more profitable would continue throughout the war."[26]

Partly reacting to repeated calls from the field and press coverage, both the Army and Air Force sent multiple independent commissions to Korea to evaluate CAS. The

[23] Millett, "Korea, 1950-1953," *Case Studies in the Development of Close Air Support,* ed. B. Franklin Cooling, 67.
[24] Admiral John S. Thatch USN ret., "Right on the Button: Marine Close Air Support in Korea," *U.S. Naval Institute Proceedings,* November 1975, page 56.
[25] Wayne Thomis, "Give Us Flying Marines! Cry Front Line GIs," *Chicago Daily Tribune,* 19 August 1950. Photocopy, Close Air Support Papers, Marine Corps Historical Division, MCB Quantico, VA.
[26] Crane, *American Airpower Strategy in Korea,* 27-28.

chairman of the House Armed Services, Representative Carl Vinson stated he intended to hold hearings on the issue also.[27] Mostly these panels were reactive attempts by different institutions to conduct fact finding, but it does not appear that true learning occurred. One of the recommendations of the Barcus report is stunning in where it lays the blame for the poor state of Army – Air Force CAS proficiency at the outset of the Korean Conflict. "The Air Force report agreed with the Army that the absence of joint training in air-ground procedures in the Far East before the war was responsible for a disorganized close air support system during the initial weeks of the conflict. *It attributed this training weakness to the nature of the Army's occupation mission and the state of training of the ground forces*."[28]

Parochial and incredibly myopic conclusions such as this, arm those who believe the USAF has institutional blind spots to certain roles and missions, CAS foremost among them. Later in the report, this commission did give sage advice on the role of USAF TACPs. The Barcus report recognized the "relatively poor regard in which the assignment was held . . .[and] recommended several measures to improve the TACP system." Their recommendations included, increased length of tours, hand picking the personnel, and the prestige of TACP officers should be increased. The report gave "serious consideration to such as assignment as a prerequisite for promotion and for assignment to the command of a combat unit."[29] The last recommendation still resonates today.

Conclusion

"Victory reduced the inter-service recrimination" when US led United Nations forces routed the North Koreans after the Inchon landings, and the war began to see-saw until stabilization near the original border in the last phase of the war.[30] CAS improved throughout the conflict as the joint force smoothed procedures, and the USAF enacted tangible steps to improve their capabilities. The arrival in theater of the Republic F-84 *Thunderjet* and the opening of Korean airfields that were jet capable aided greatly as well.

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[27] Crane, *American Airpower Strategy in Korea*, 60-61.
[28] John Schlight, *Help from Above, Air Force Close Air Support of the Army, 1946 – 1973*, (Washington, DC: Air Force History and Museums Program, 2003), 166.
[29] Schlight, *Help from Above*, 166.
[30] Millett, "Korea, 1950-1953," *Case Studies in the Development of Close Air Support*, ed. B. Franklin Cooling, 369.

Unfortunately, as at the conclusion of World War II, the end of the Korean Conflict was "ambiguous" enough for the USAF to voice that it played a, if not the, key role in bringing victory.[31] This pattern became a trend that continued beyond 1953. Perhaps secure in their traditions, capabilities, and contributions, USAF leaders of the Korean era should have focused on the needs of the joint force and their unique contribution, instead of chest thumping. Army General Mathew Ridgeway assumed overall command of UN Forces Korea after General McArthur was relieved. In his 1967 book *The Korean War*, Ridgeway stated that the Army and Marines sustained 97 percent of all US casualties and "it was the performance of the ground forces that determined the success or failure of the United Nations effort."[32]

With parochial statements on both the air and ground sides of the argument, a third opinion is needed. As after World War II, strategist Bernard Brodie's thoughts written six years after the Korean Conflict, were perfectly clear. "On the basis of Korean and World War II experience, that air forces, like naval forces, will play an ancillary role to ground forces. This idea is often rejected or resisted, but it seems indisputable on the evidence."[33]

[31] Crane, *American Airpower Strategy in Korea*, 11.
[32] Crane, *American Airpower Strategy in Korea*, 179.
[33] Bernard Brodie, *Strategy in the Missile Age*. Santa Monica, CA: Rand Corporation, 2007 {of the 1959 original}, 404.

Conclusion

. . .it is really more sensible not to contrast land power and airpower, but rather to consider them as inherently complimentary dimensions of variable relative significance within a single military, strategic, and political effort.

-- Colin Grey

The Main Threads of Integrated CAS 1918 – 1951

This thesis has traced different histories, approaches, and trials regarding CAS between World War I and 1951. This conclusion will focus on the threads that pervade the chapters, and present supposition for the future of integrated CAS based upon this history and the author's experiences.

The Germans developed integrated CAS first, in early 1944 on the Eastern Front, largely due to Wolfram von Richthofen's leadership and influence. The irony for the Germans was that despite operational and tactical brilliance in war, they faced insurmountable strategic and logistical challenges. The Soviet Red Army turned the tide with ceaseless combined arms symphonies on a scale that approached the unimaginable. None of the German's innovative CAS concepts could deliver the Third Reich from this flood tide.

German integrated CAS development led the world. In general terms their Luftwaffe and Army team was homogenous, in that they shared a professional ethos and focus on operational brilliance, and were desirous of integration. Their development in the interwar period continued without pause, and in fact was accelerated greatly by the Spanish Civil War. Wolfram von Richthofen was their driving force behind CAS, and proved a prescient tactical and operational genius. He did not waiver in a career-long focus on the Luftwaffe conducting army support missions.

The US Marine Corps developed integrated CAS beginning in earnest in 1927. In Nicaragua the Marines tried hard at integrating ground and air action. The Marines' air arm has always and remains wholly dedicated to their infantrymen's priorities. An irony for the Corps was that of the three forces evaluated in this thesis, they were the last fully integrated, despite their air-ground focus. The unique challenges of the Southwest Pacific campaign, their small relative size and institutional gravitas in the early stages of World War II must aid in explaining this. They did not have an advocate for CAS of the

caliber of Wolfram von Richthofen early in the war, but in mid-late 1944 (then) Lieutenant Colonel Keith B. McCutcheon did as much as could possibly have been done under the circumstances. Due to his efforts, the Corps ethos, and clear-minded senior leaders, they integrated not just with the ground element, but with the US Army in the re-conquest of the Philippine Islands beginning in January 1945. The Luzon plain offered ample room, and the dramatic rescue of American citizens offered the mission to prove the capability of the Marines' new state of the art.

The US Army Air Service began with a focus on ground support in late World War I and continued in this direction for a few years immediately following the war. Many pressures, personalities and service proclivities then stymied US Army Air Corps CAS development until the crucible of heavy combat in North Africa set them on the path once again. Historian Richard Muller states that the twin influences on their renewed focus on CAS development in 1943 was their dismal combat record of air-ground teamwork in North Africa and Sicily and the British example of CAS and Air Force leadership.[1] Major General "Pete" Quesada was a young, driven combat leader who recognized the integrative benefits of working together with General Bradley's 1st US Army. Integrated immediately prior to the St Lo breakout during Operation Cobra in Normandy, General Quesada was responsible for innovating armored column cover, the pinnacle of Allied air-ground synergy in Europe and a primary reason the Allies were able to keep the tempo of combat operations so high.

After drastic post-World War II tactical airpower reductions, the US found itself in a high intensity land war in June 1950 on the Korean Peninsula. Soon service differentiations became evident in the area of CAS. Initially a serious dichotomy of proficiency and prioritization primarily between the USAF and the USMC caused a serious controversy. Eventually these issues were smoothed out. The USAF did improve their CAS capabilities as the war began its first upward see-saw swing for UN forces after the Inchon landings. Unfortunately many lessons were treated by the USAF as tactical air aberrations and not lessons to be absorbed.

[1] Muller, "Close Air Support" *Military Innovation in the Interwar Period,* ed. by Murray and Millett, 186.

Major CAS Innovations 1951-2003

The major US CAS innovations in the following 50 years developed due to the pressure of combat operations, the specific challenges of the Vietnam Conflict (1965-1973) and in the maturation of weapons and sensor technologies. Of note from Vietnam was the USAF's development of large cargo aircraft converted to gunship platforms with outstanding precision fire and combat endurance capabilities. The AC-47 and AC-130 proved their worth in Vietnam and the capability remains a unique asset in the US arsenal. The drawbacks are that reducing large built-up structures in excess of two stories takes a considerable amount of munitions and time, and that the plane has obvious vulnerabilities. Their precise targeting, loiter time, and heartening (to friendly forces) or terrifying (to enemy) aural signature is yet another combat multiplier.[2]

Helicopter gunships developed during Vietnam as well and they have proven capable and versatile platforms. Flying in close proximity to ground forces can aid their coordination and perception of the battlefield when working as an air-ground team. Helicopters have the unique ability to land next to the ground forces and conduct face-to-face briefs with the ground combat element and co-locate themselves with the infantry.[3] Finally utility and certain gunship helicopters allow key ground combat leaders to go aloft on aerial reconnaissance and other combat missions.

Other improvements to CAS from this period include beacon bombing as a primitive precision guidance system and later in the war, developments such as the Walleye air to ground television guided missile. Overall, reliable CAS precision guidance munitions were not available until the arrival of the Paveway II family of laser-guided bombs and Maverick family of laser-guided missiles in the 1970s. A takeaway from the 1983 invasion of Grenada was that the DOD joint force needed to standardize communication gear and procedures. 1986's Goldwater-Nichols Act directed such reforms and standardized much of DOD practices. The Joint Terminal Air Controller / Enlisted Terminal Air Controller programs along with the standardized Joint Close Air

[2] Author's experience.

[3] The author and his section leader landed and shut our helicopters down for the night co-located with US Marine Corps' Regimental Combat Team 7 multiple times in the drive to Baghdad in March-April 2003. Our two UH-1Ns constituted immediate on-call CAS, armed reconnaissance and many other roles for the Regimental Commander, (then) Colonel Steven Hummer USMC. The infantry made it perfectly clear how grateful they were to have "eyes in the sky" at their beck and call.

Support doctrine increased US DOD CAS lethality down to more decentralized, tactical levels.

CAS Lessons from 2nd Fallujah – One Marine's Opinion

The author had a unique perspective during the planning and execution of Operation Phantom Fury and offers opinions on the primary CAS lessons from the battle. The Commanding Officer of the 3rd Battalion / 1st Marines, (then) Lieutenant Colonel Willard Buhl USMC stated his intention that the Battalion be the "most air centric in the first Marine Division." He intended for the Battalion to attempt air-ground teamwork in all combat operations. Trained and indoctrinated in combined arms maneuver warfare since our first days in the Corps, many of the Battalion's officers realized we had a unique opportunity to apply our doctrine to a greater degree than many Marines ever had. With the long-sought promise of precision guided munitions met, air could greatly help in this regard through the aggressive application of integrated CAS. Other aviation roles included aerial reconnaissance and aerial casualty evacuation. Many ground innovations occurred during the battle, such as 3rd Battalion / 1st Marines' use of armored bulldozers as distinct maneuver elements, but this section will focus on aviation's application.

A primary lesson learned was that multi-crewed aircraft received, processed, and prepared to strike targets faster than single seat aircraft. This was regardless of service branch or type model series aircraft. F/A-18Ds and F-15Es processed air strike requests and 9-line information very rapidly. These aircraft could split up crew duties and gave the ground element high confidence they were focused on the proper target and had received all pertinent information correctly. 3rd Battalion / 1st Marines called air strikes from AC-130Us, F/A-18Ds, AV-8Bs, F-15Es, F-16Cs and AH-1W aircraft.

The 3rd Battalion / 1st Marine air shop (consisting of the author and three FACs) developed concepts such as Type II "teamwork" air strikes. This concept had the FAC relay the target location with the best refinement they could make on scene. Next the air strike request came to the air officer, who coordinated to get CAS aircraft. Then the air officer, while speaking to the FAC, utilized computer imagery to aid in evaluating the target location. When the CAS aircraft arrived, all three individuals worked together to refine the target location. Target location was *always* the initial focus, with the FAC, the

air officer, and the CAS pilot working as a team to refine and verify the correct grid. These tactics, while not wholly innovative, enhanced and readjusted older procedures. Documented, these tactics were relayed to the JCAS conference in 2005.

Every weapon 3rd Battalion / 1st Marines controlled was a precision guided munition, save nine instances of fixed wing strafing. In these nine instances, the preferred munition was multiple GBU series bombs, but due to adjacent unit restrictions in these nine cases, 3rd Battalion / 1st Marines conducted fixed wing strafing attacks instead. Helicopter gunships were utilized with their precision guided missiles as well.

Ground based laser designation proved problematic on so many levels that of 276 airstrikes, less than five were conducted via this method. That is not to say the system has no utility, simply just that with confidence in the CAS aircrew and clear communications, it was in almost every case safer, faster, and more lethal to have fixed wing conduct self or buddy laser designating instead of ground based lasing from a MULE or SOFLAM system. Computer based aids proved incredible for the targeting, processing, and evaluating of CAS strikes. Falcon View and the Precision Strike Suite – Special Operations Forces (PSS-SOF) systems were key enablers of CAS. In general terms, these systems were far more precise and capable than physical maps and physical images or reference graphics. The computer capability to track and update friendly locations, targets, and air strikes was outstanding, making many of the older battle tracking methods clearly obsolete.

Fixed wing CAS assets with advanced targeting pods were an absolute necessity. LANTIRN systems and older technology, or indeed dumb bombing, would not have achieved near enough targeting fidelity to ensure the safe probability of air strikes. This was all the more compelled by the fact that dozens of 3rd Battalion / 1st Marines' air strikes were within danger close distances, per Joint JCAS doctrine.[4]

Recommendations for the Future of US CAS

Tangible steps should be taken to fully synergize the US Navy - Marine Corps team for integrated CAS training below the graduate level. In second Fallujah 3rd Battalion / 1st Marines had more challenge with getting US Navy fixed wing to strike

[4] Joint Publication 3-09.3, *Close Air Support*, 8 July 2009.

targets in a timely manner than any other service aircraft. There may be all manner of reasons for this, but in the author's opinion these aircrew were the least "fluent" in CAS terminology and the least proficient in getting high target situational awareness in a timely manner.

Navy Captain Thach, his Sailors and their selfless efforts alongside VMF-214 provides a historical case of outstanding Navy-Marine Corps teamwork in support of integrated CAS. While the Navy-Marine Corps graduate schoolhouses facilitate outstanding training (at Marine Aviation Weapons and Tactics Squadron-1, MCAS Yuma, AZ and the US Naval Strike and Air Warfare Center at NAS Fallon, NV) more effort should focus Navy and Marine Corps training down to squadrons and battalions, both ashore and afloat.

The author's combat experience is not conducive to judgment on the state of US Army and USAF air-ground teamwork. Judging from the historical record, all manner of effort should go into ensuring rigorous CAS instruction and training occur. The author recommends a USAF review on FAC and JTAC/ETAC requirements and doctrinal allocation. This is required in recognition of the fact that in current USAF doctrine there is a dearth of officer FACs and ALOs. This became quickly evident in high tempo urban combat, with many munitions dropped inside danger close distances. In 3rd Battalion / 1st Marines case, there were hundreds of air strikes that had three (or more when the regimental level of coordination is considered) fully trained officer FACs / air officers coordinating simultaneously. This level of coordination facilitated striking targets simultaneously down as low as the company level. Thanks to the superior air space coordination plan directed by (then) Lieutenant Colonel Gary "Static" Kling USMC, and his 1st Marine Division Air shop, an unprecedentedly high tempo of air strikes was attainable. This greatly aided the ground assault. This tempo would not have been achievable with only one officer ALO at the Battalion level and above, or with enlisted JTACs who could not converse with CAS aircraft as effectively as seasoned pilots and Naval Flight Officers or Weapons and Systems Officers.

CAS's most important contributions are that it can simultaneously terrify the enemy and hearten friendly forces. With the promise of precision guided munitions married to new computer visual and tracking aids, the lethality of modern CAS can be

prosecuted in an aggressive manner that would have been unattainable just a few years ago. At the height of the 2nd Battle of Al Fallujah, 3rd Battalion / 1st Marines Air conducted 24 airstrikes in under five hours, completely destroying 20 targets. These strikes were conducted with a high confidence of first-round effects and safety of the friendly ground forces. Officer leadership is vital in this realm.

Sun Tsu and Summation

Despite the thousands of military officers who read Sun Tsu, on the modern battlefield, an individual with a great opportunity to achieve one of his maxims is a FAC or JTAC. "To subdue the enemy without fighting is the acme of skill" claims the master.[5] There were many instances both during the Allies drive across Europe and on the Luzon plain during World War II that enemies who were exposed to integrated CAS chose not to fight.[6] Perhaps in few other modern conventional tactics is there more hope of achieving the dictum's fruition, which articulates the soldier's ultimate goal. Aggressively applied, integrated CAS and the enemy's perception of it are major factors in modern battle.

In second Fallujah, 3rd Battalion / 1st Marines captured over 1,200 enemy insurgents.[7] How many were influenced by air? There is no definitive answer to that question. A better question is how many were influenced by the air-ground team? The answer to the author is clear. Every single enemy who was in proximity to see, hear, or feel a coordinated airstrike, or indeed sense that the air-ground team was about to aim an airstrike at them. Despite all manner of twentieth century prognostications on bombing to reduce the will of an enemy, or of a nation et cetera, integrated CAS strikes have shown conclusively that they have great effects upon enemies. Perhaps it is because integrated CAS truly places enemies in a dire dilemma, under assault from the ground and the air simultaneously. This is the ultimate in combat integration.

This thesis has attempted to cover the history of fully integrated CAS strikes from World War I to 1951 in detail. An overview of major CAS innovations was given from

[5] Sun Tsu, *The Art of War*, trans. Samuel B. Griffith (New York, NY: Oxford University Press, 1963),115.
[6] ThomasAlexander Hughes, *Over Lord: General Pete Quesada and the Triumph of Tactical Air Power in World War II*, New York, NY: The Free Press, 1995), 221-224.
[7] 3rd Battalion / 1st Marines Command Chronology, 1 Nov 2004 – 31 Jan 2005.

1951 to 2003, with some of the author's CAS lessons learned from 2nd Fallujah. Finally, supposition on the future was made. All of this was done with one major thought in mind: may US infantry never advance without the pinnacle of integrated CAS at their beck and call.

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